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WATER AND POWER IN ARCHITECTURE

Charleston SC

by Charles Dowd

A Design Thesis

Presented to the Faculty of

The College of Architecture at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Master of Architecture

Major: Architecture

Under the Supervision of Professor John Craig Babe

Lincoln, Nebraska

May 2020

WATER AND POWER IN ARCHITECTURE

Charleston SC

by Charles Dowd

Advisor Professor John Craig Babe

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ABSTRACT

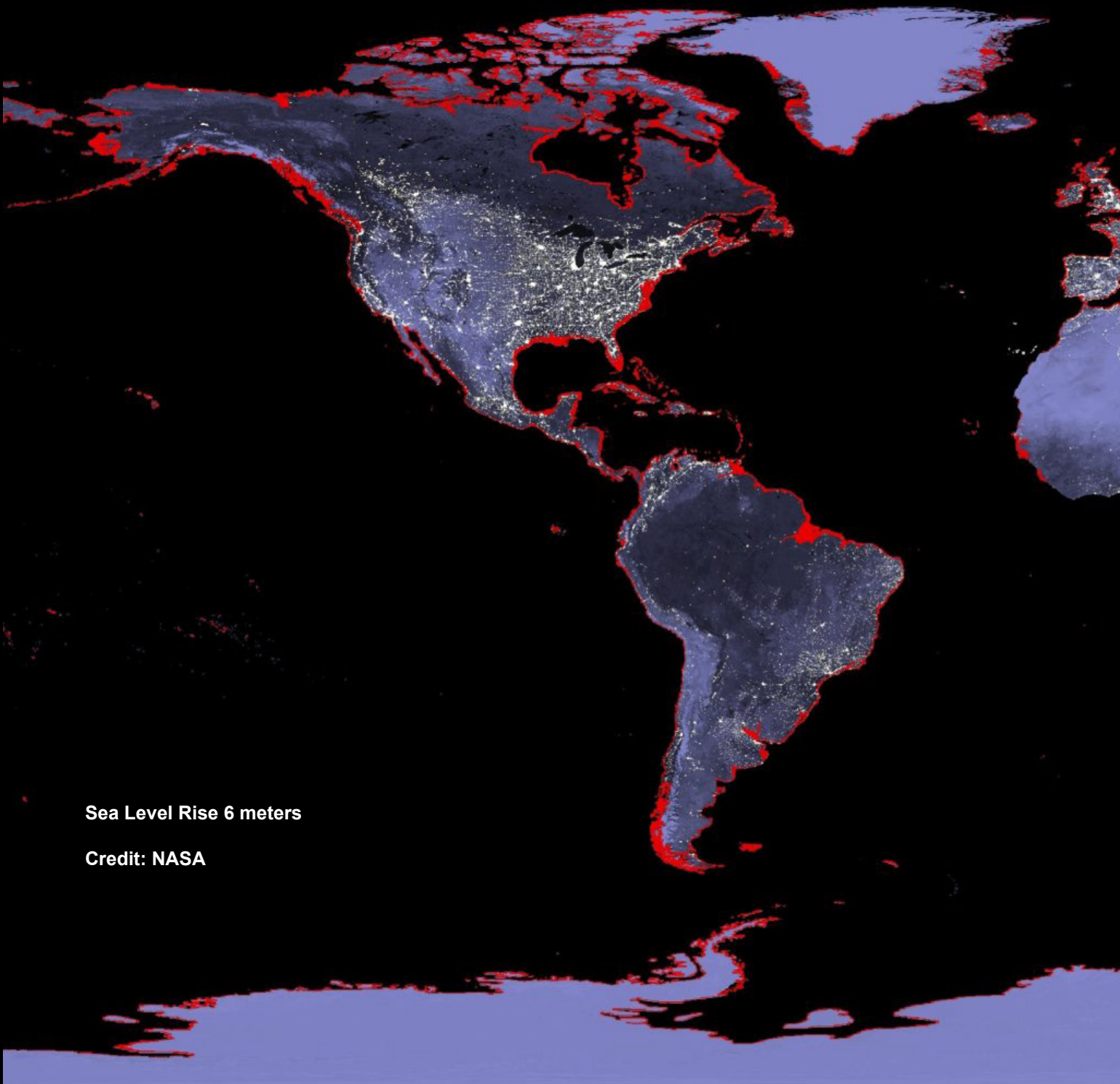
Charleston has not always been the peninsula it is today. In fact over time it has increased in size. It took a tremendous leap forward between 1670 and 1802. The city has been gaining ground through the use of landfill techniques.

This project explores the relationship of ground and power. Through examining Charleston's role in the slave trade it is revealed that expansion of the city is influenced by the political and economic values of the time and vice versa.

DESIGN THESIS

This project conceives that architecture can create inclusive functions by acknowledging the past while enabling opportunities for the future instead of exclusive systems and environments of the present.

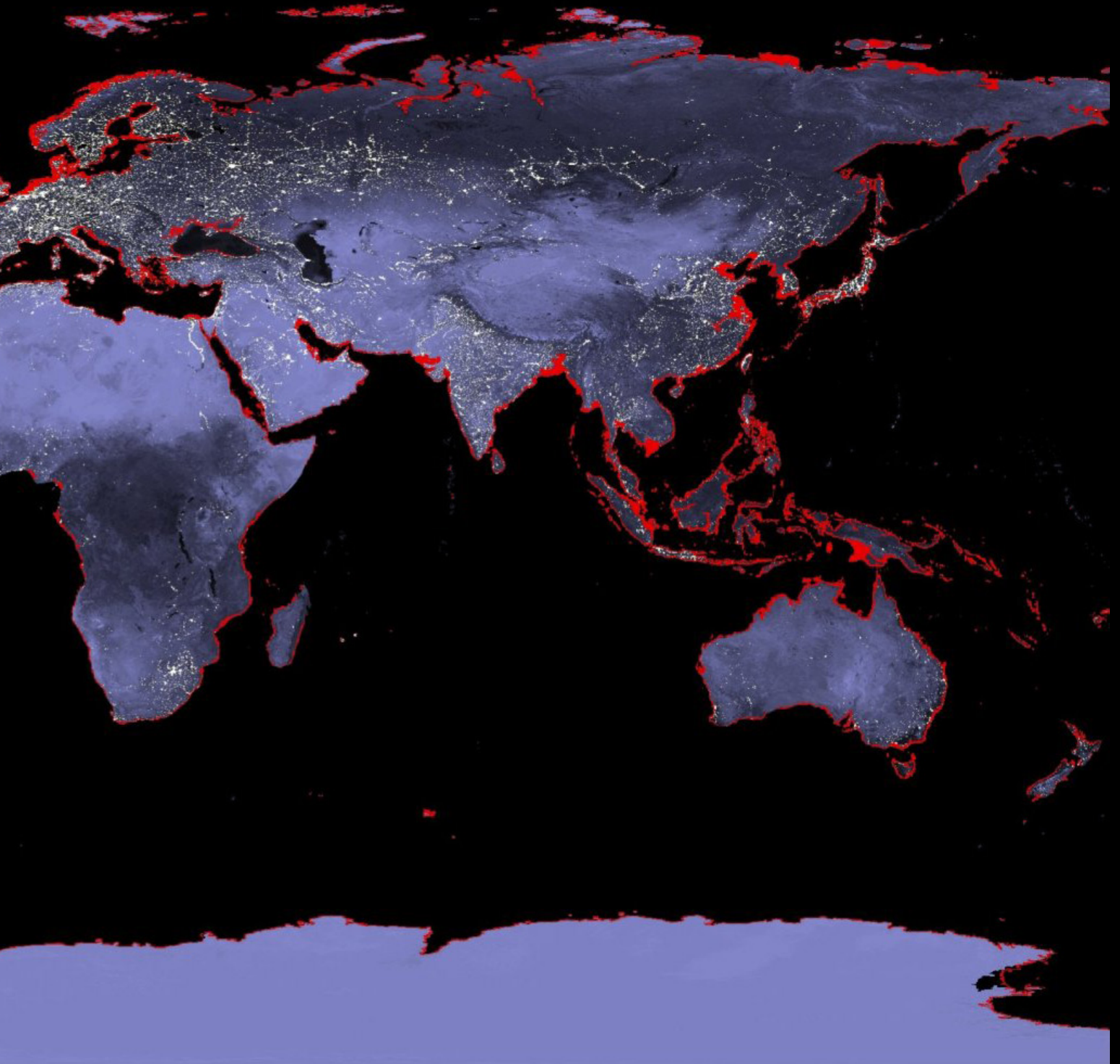
02 EXPLORATION OF A CITY

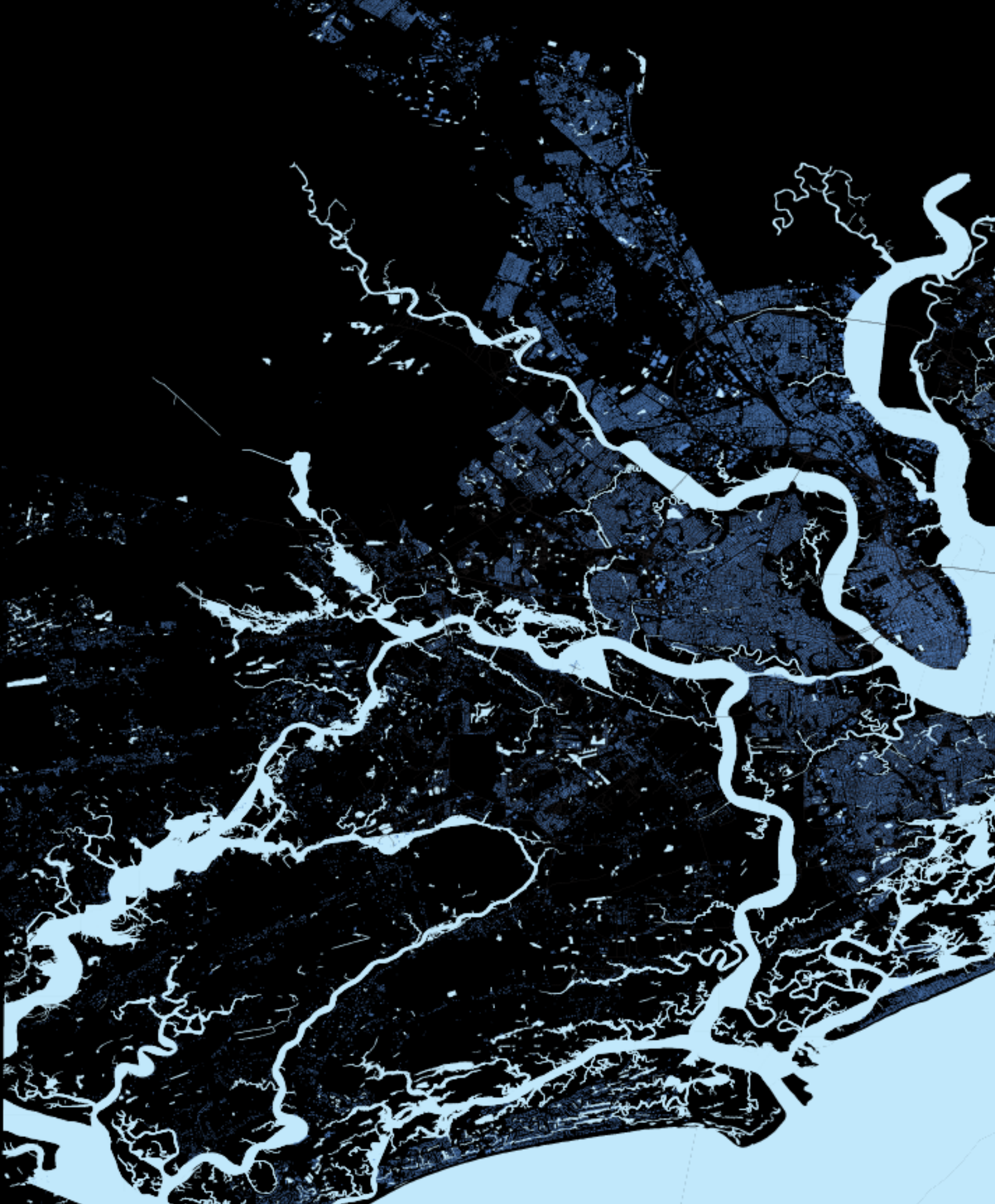


Today there are nearly 3 billion people living on the planet.

Half of which live within 200km of the coast.

With the sea level rising there will be an intersection of population and the water, creating an opportunity and demand for a response from architecture to living with water.



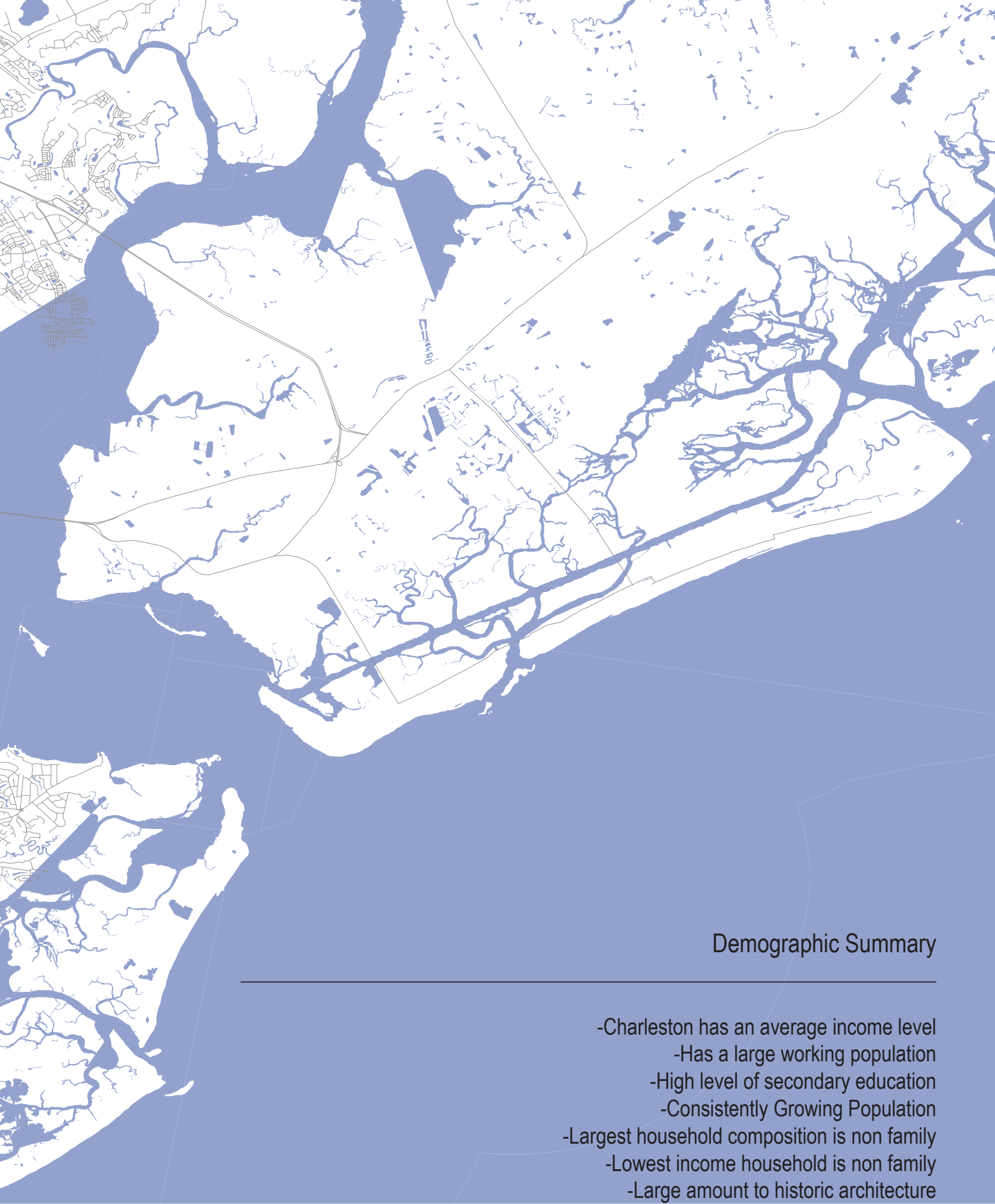




City of Charleston

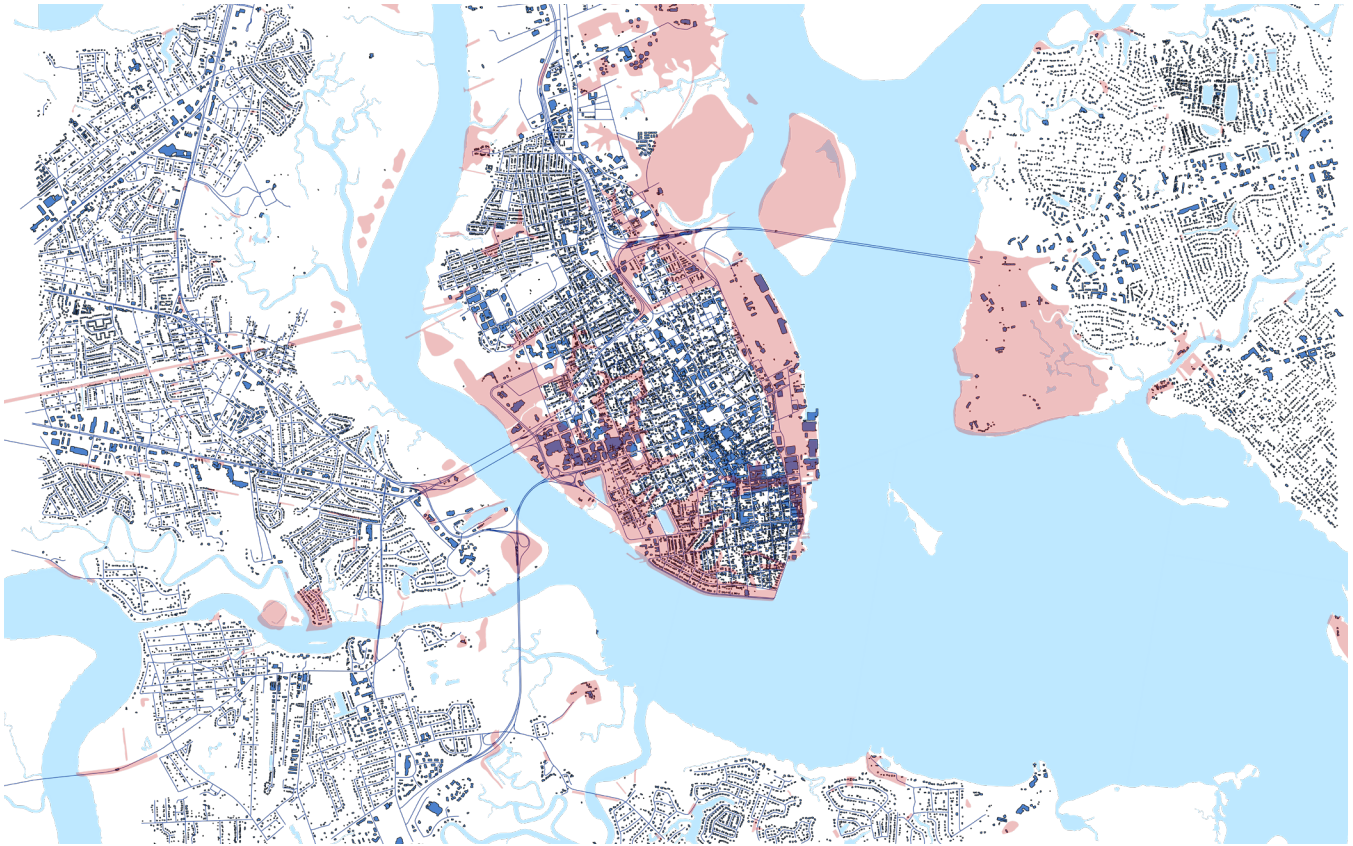
Charleston, South Carolina is one such city that exists along the coast line. It is an old city originally founded in 1670. It has unique history dating from the revolutionary war to the civil war. Fort Sumter is located nearby. Charleston is no stranger to dealing with problems of water either. This made it the perfect city to explore.





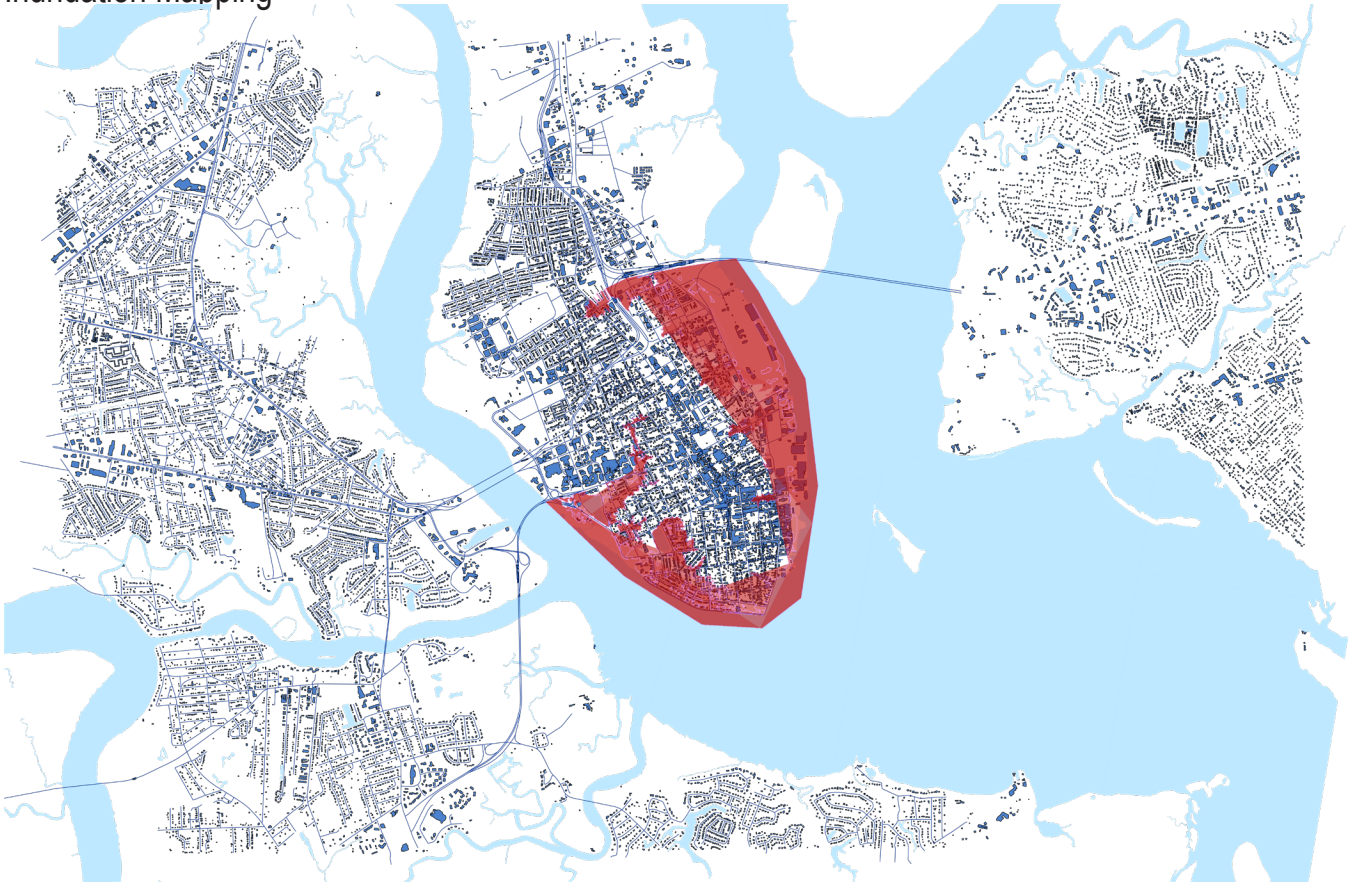
Demographic Summary

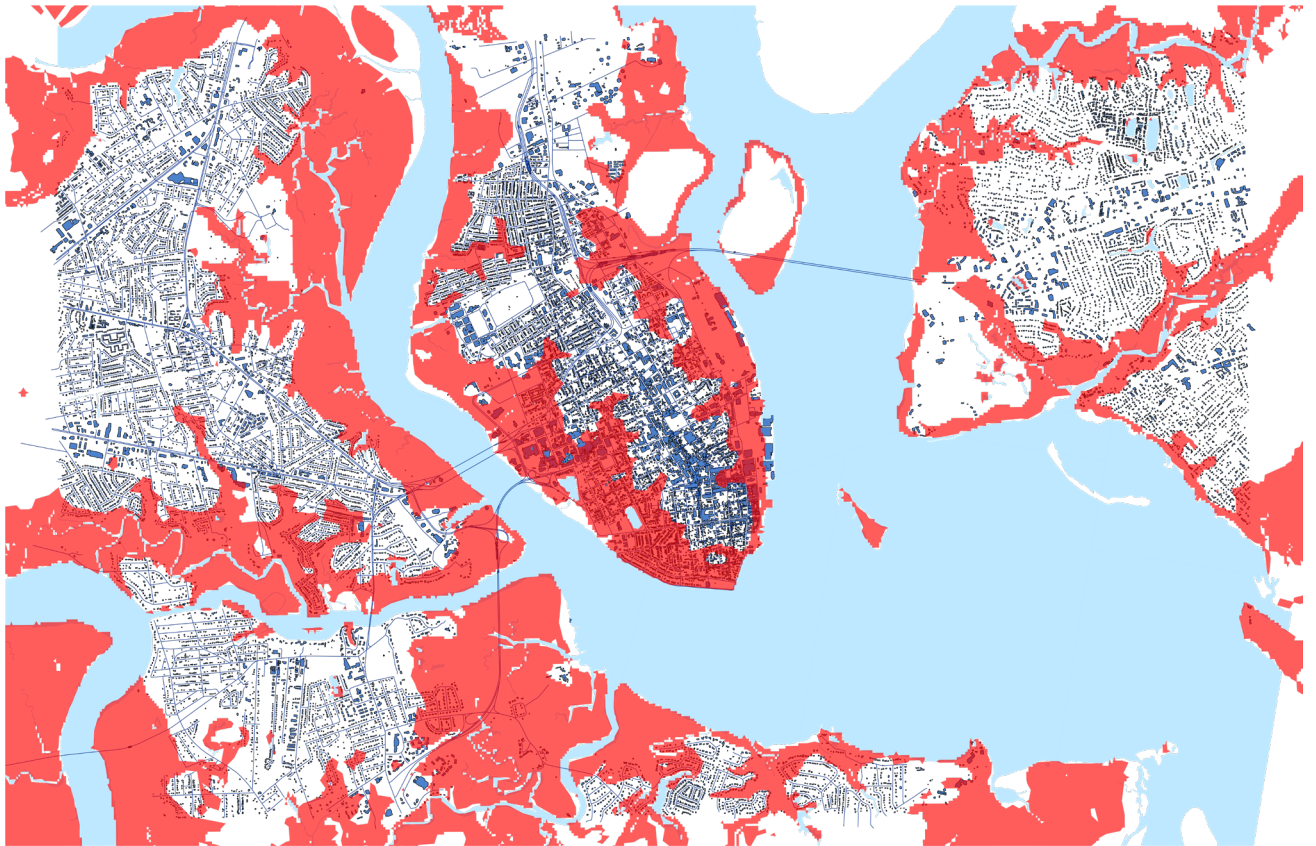
- Charleston has an average income level
- Has a large working population
- High level of secondary education
- Consistently Growing Population
- Largest household composition is non family
- Lowest income household is non family
- Large amount to historic architecture



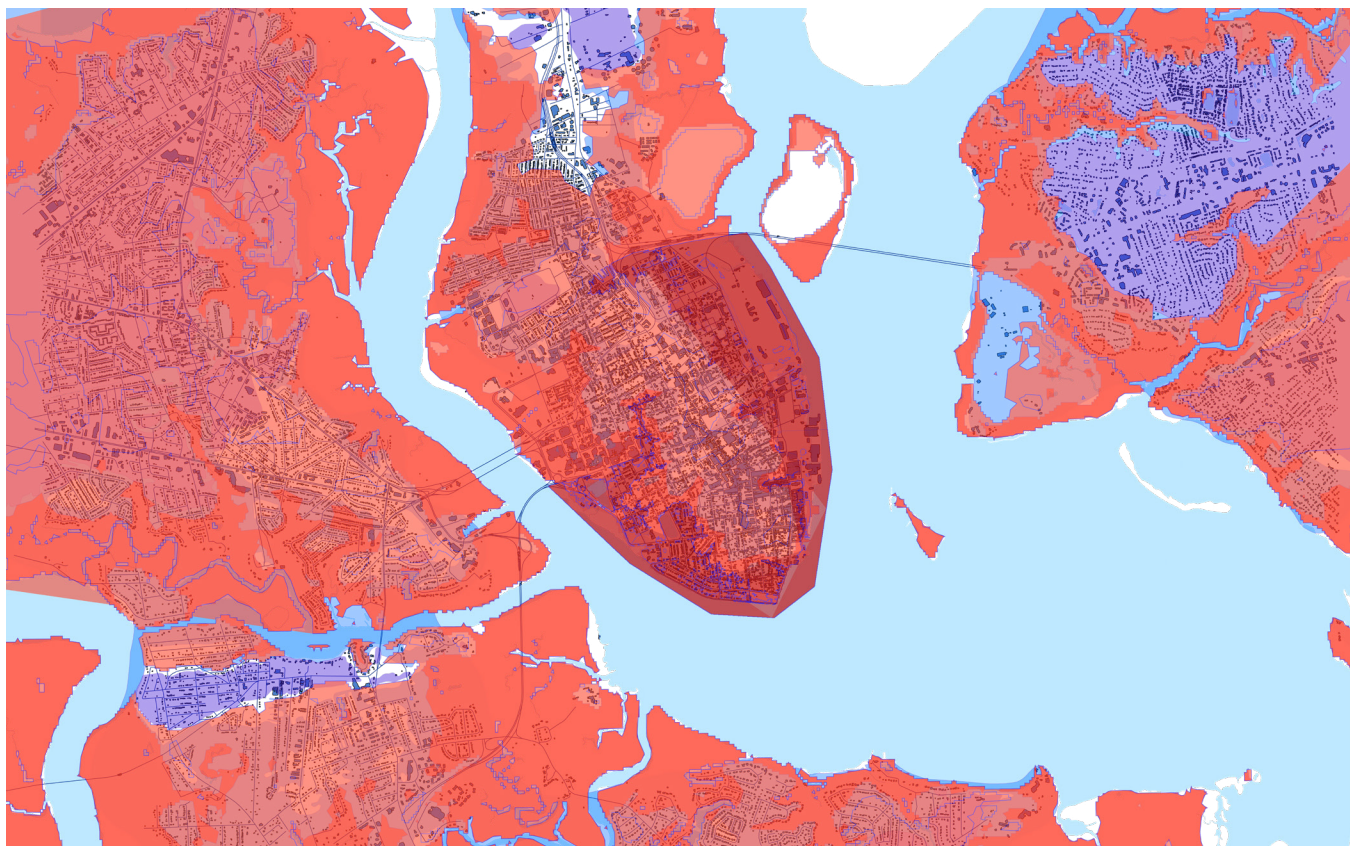
Charleston Landfill areas

Inundation Mapping



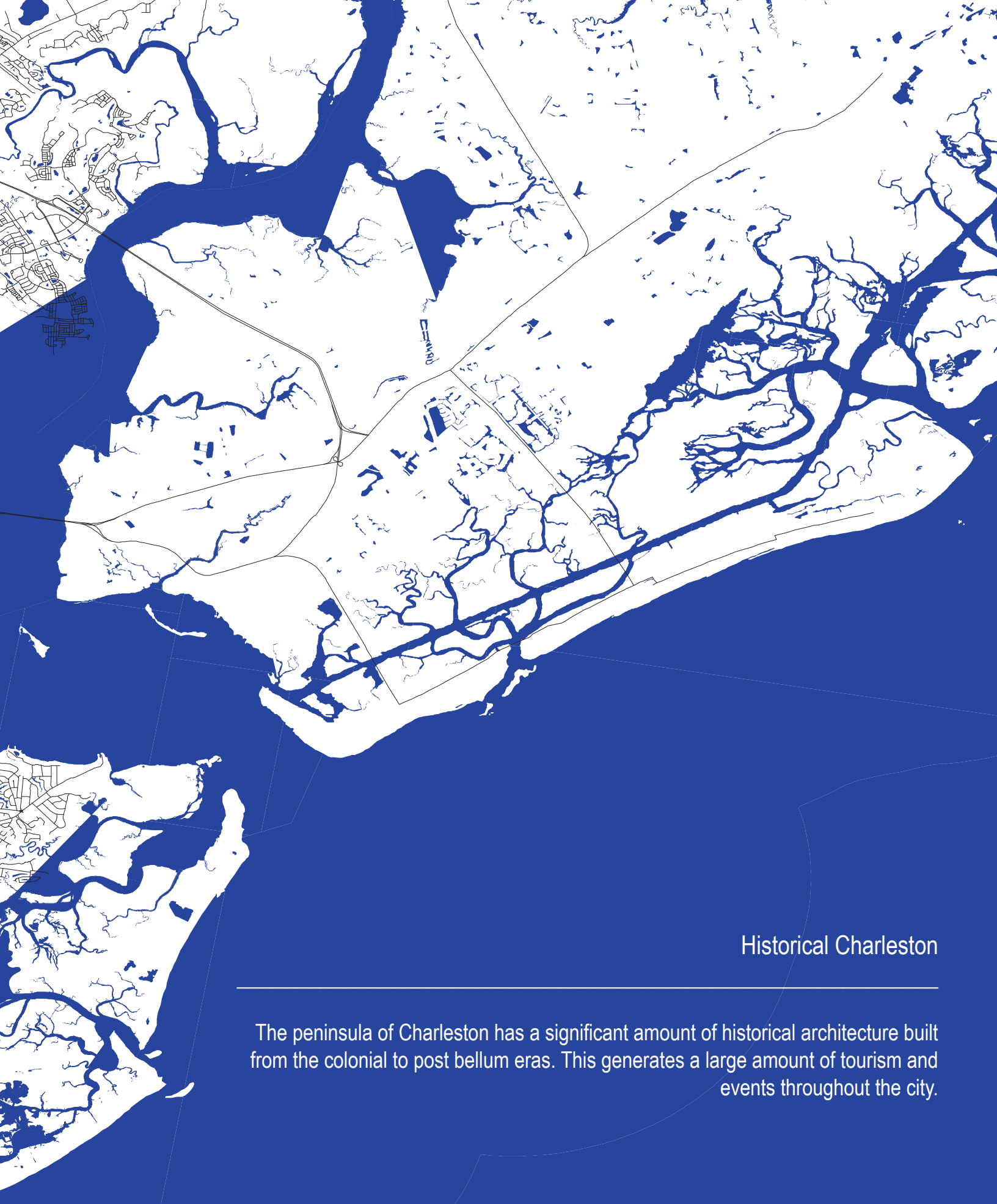


Slosh Cat Floor Zone Mapping



Overlaid Mapping





Historical Charleston

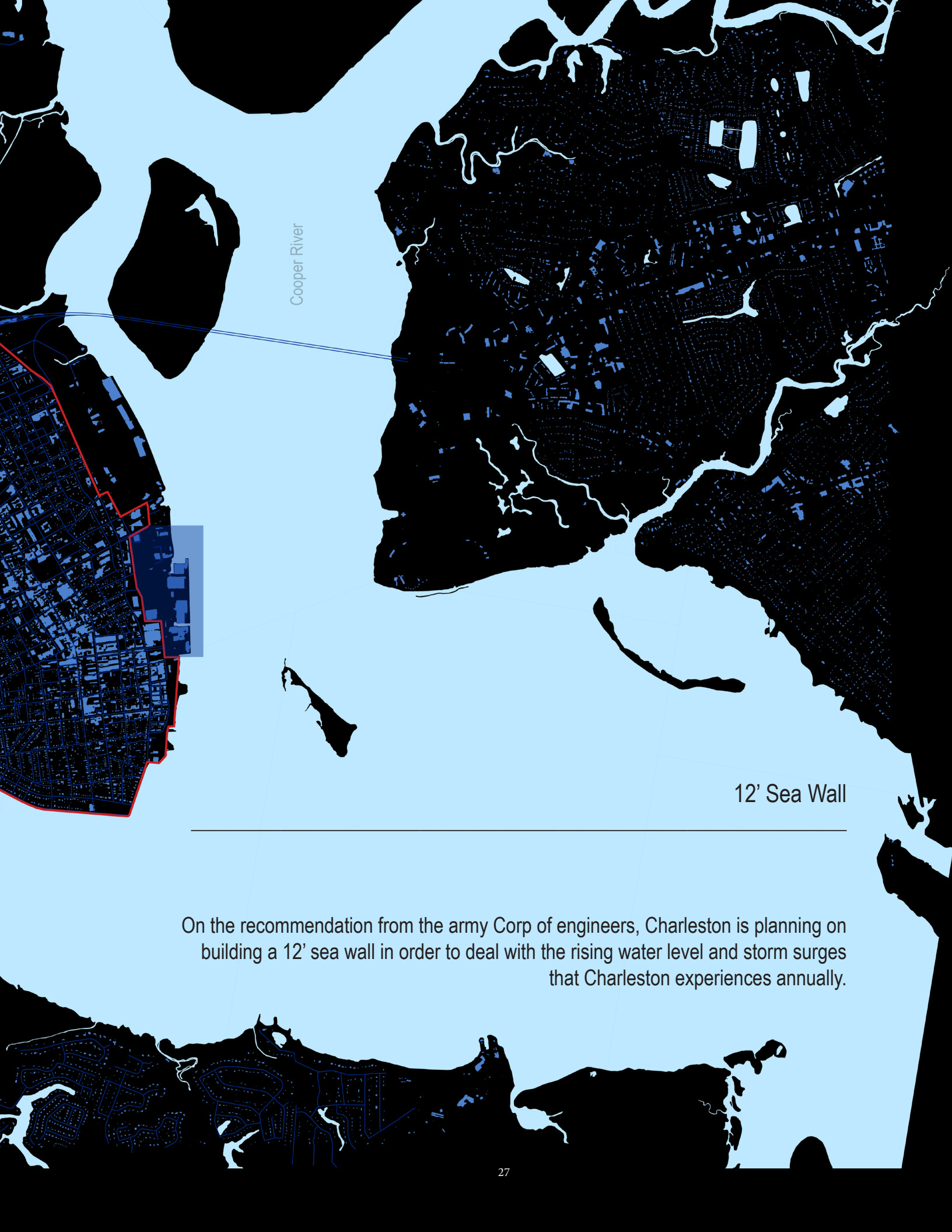
The peninsula of Charleston has a significant amount of historical architecture built from the colonial to post bellum eras. This generates a large amount of tourism and events throughout the city.



12' Sea Wall



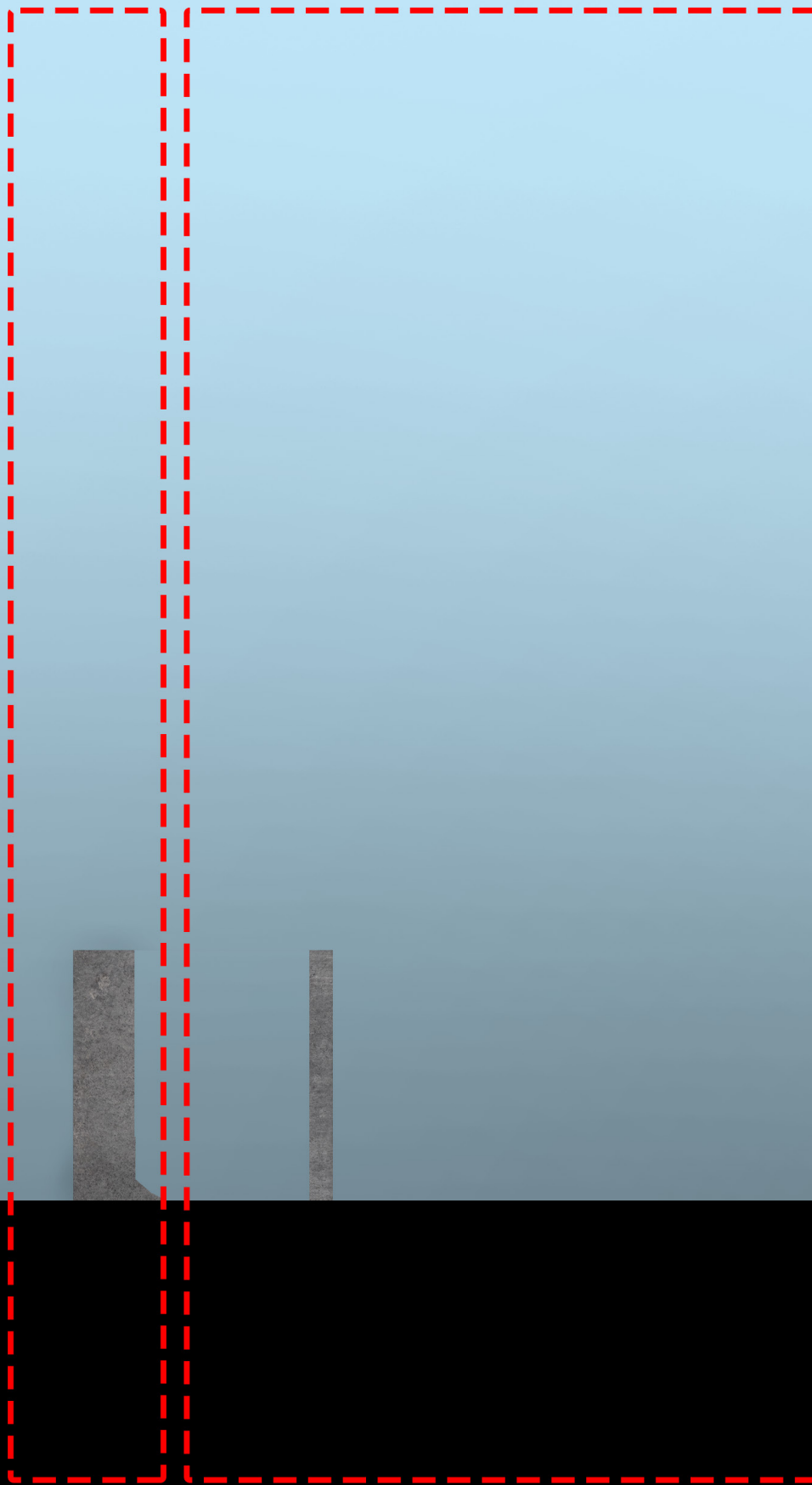




Cooper River

12' Sea Wall

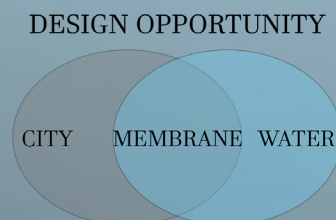
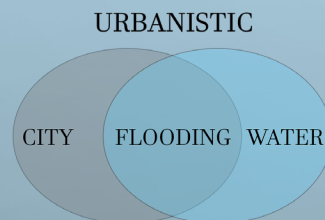
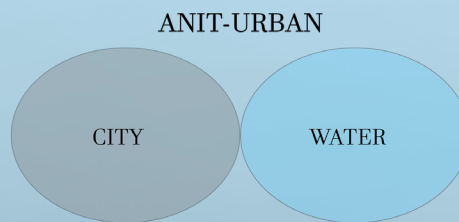
On the recommendation from the army Corp of engineers, Charleston is planning on building a 12' sea wall in order to deal with the rising water level and storm surges that Charleston experiences annually.



SEA WALL

MEMBRANE

The initial design concept was focusing on the wall as a membrane function and a way to allow things to move in and through the sea wall.



Path of the Sea Wall

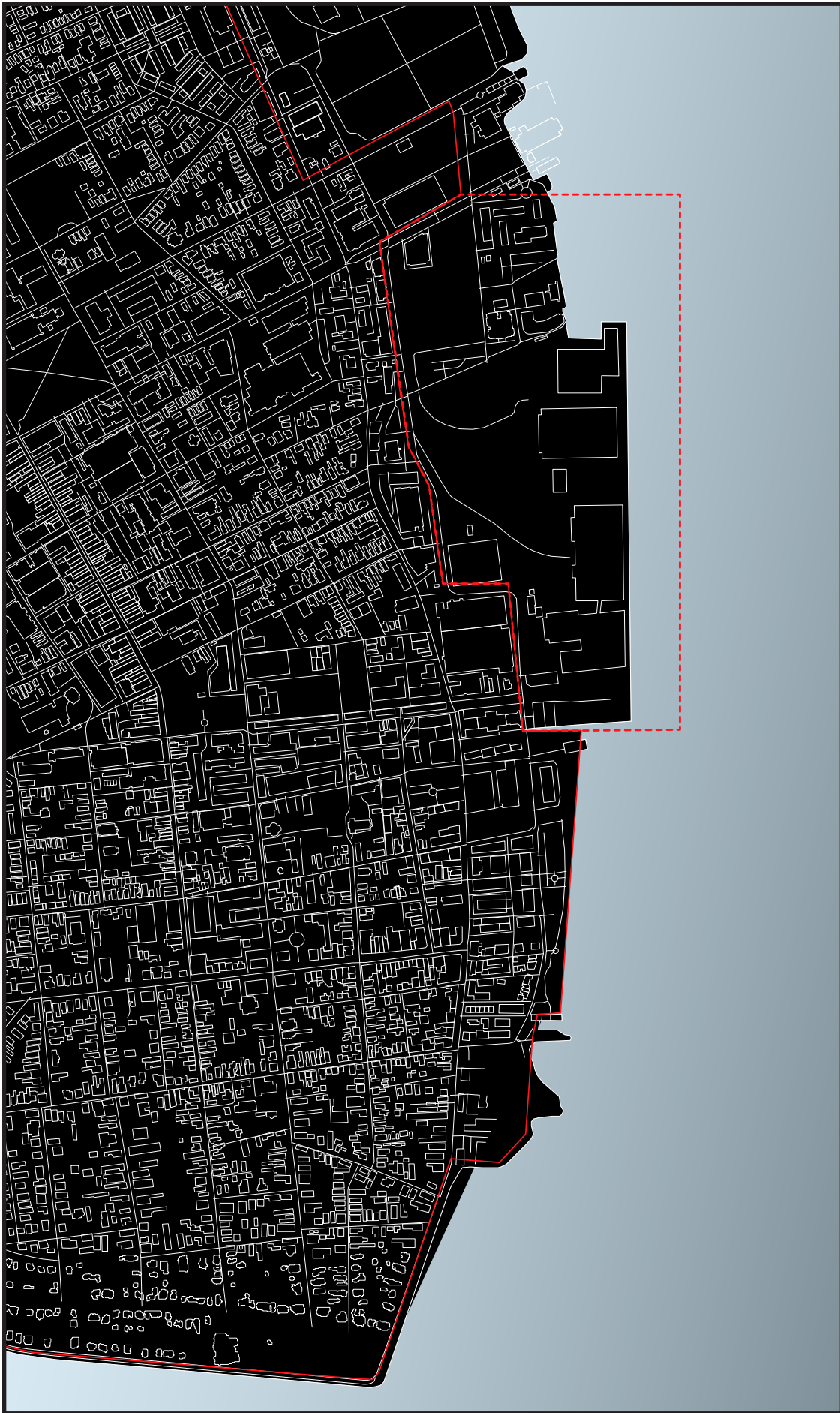
When I went to Charleston I had the chance to participate in a design meeting with the city planning department. They were going through an exercise on how to treat this wall that the city was planning on building with the help of the army corp.

When talking with the Corp, they outlined that they have a limited set of tools to use in stabilizing areas. The Corp has to use an equation when justifying a project. The equation uses the land total assisted, the value of the assets on the land, and the number of people affected - this divided by the cost.

In planning the route of a sea wall you have to choose what is included and what becomes excluded. It is then inherently political.

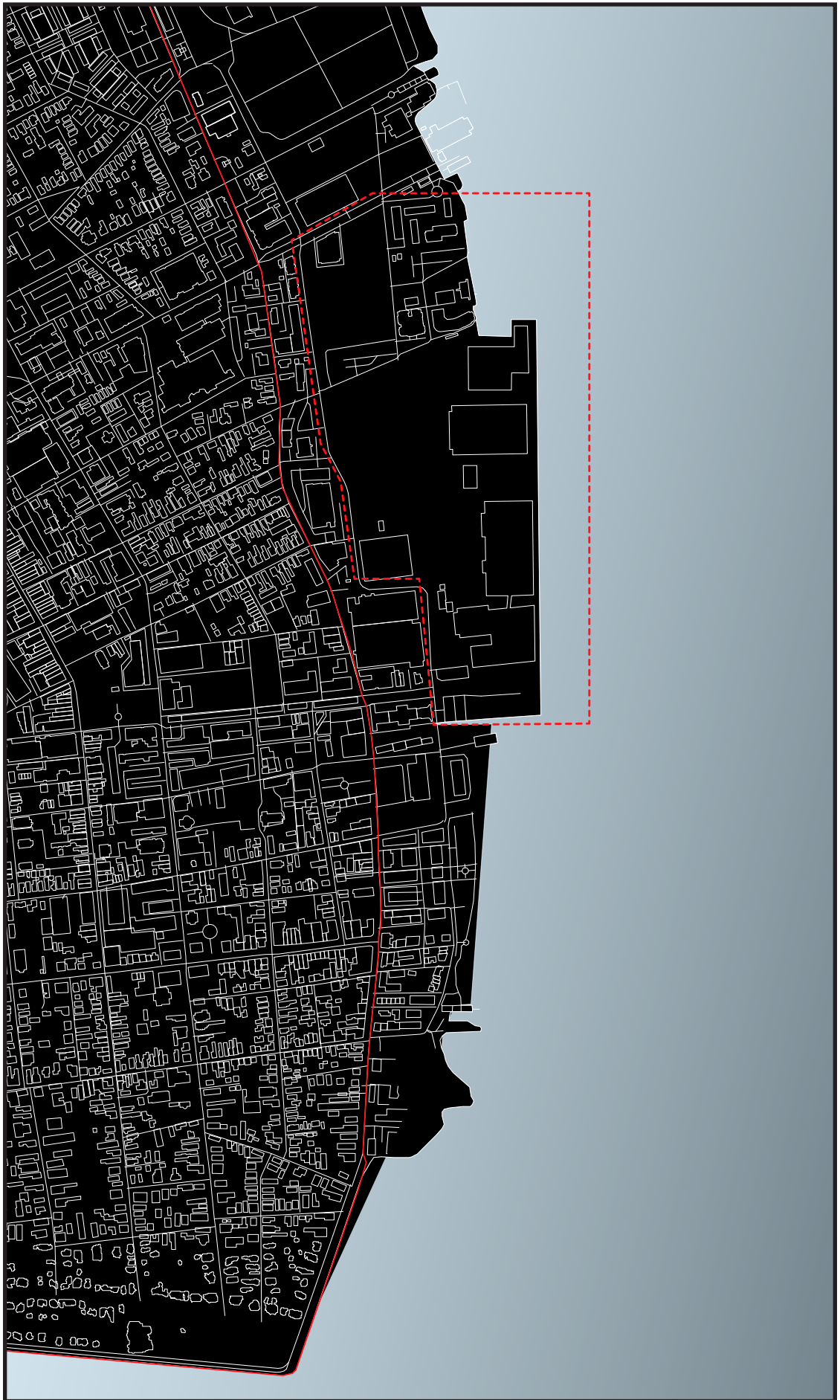
Therefore exercises observing what changes in the wall path accomplish was necessary to understand what is valued and what is not valued. For this, I took the original route and made minor alteration to explore these values.

The area I focused in on was influenced by the amount of landfill present and inundation and flooding conditions found through earlier studies.



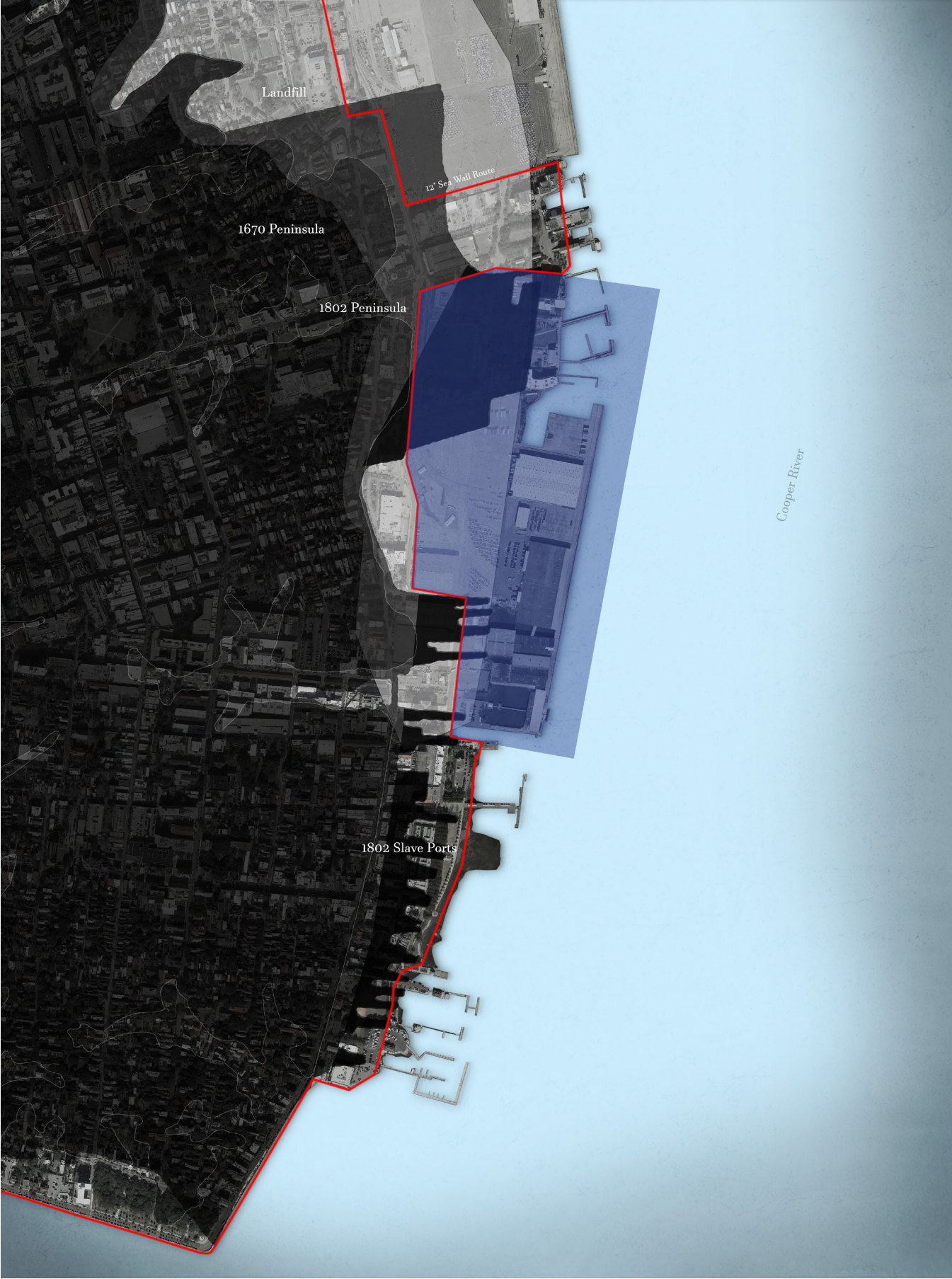


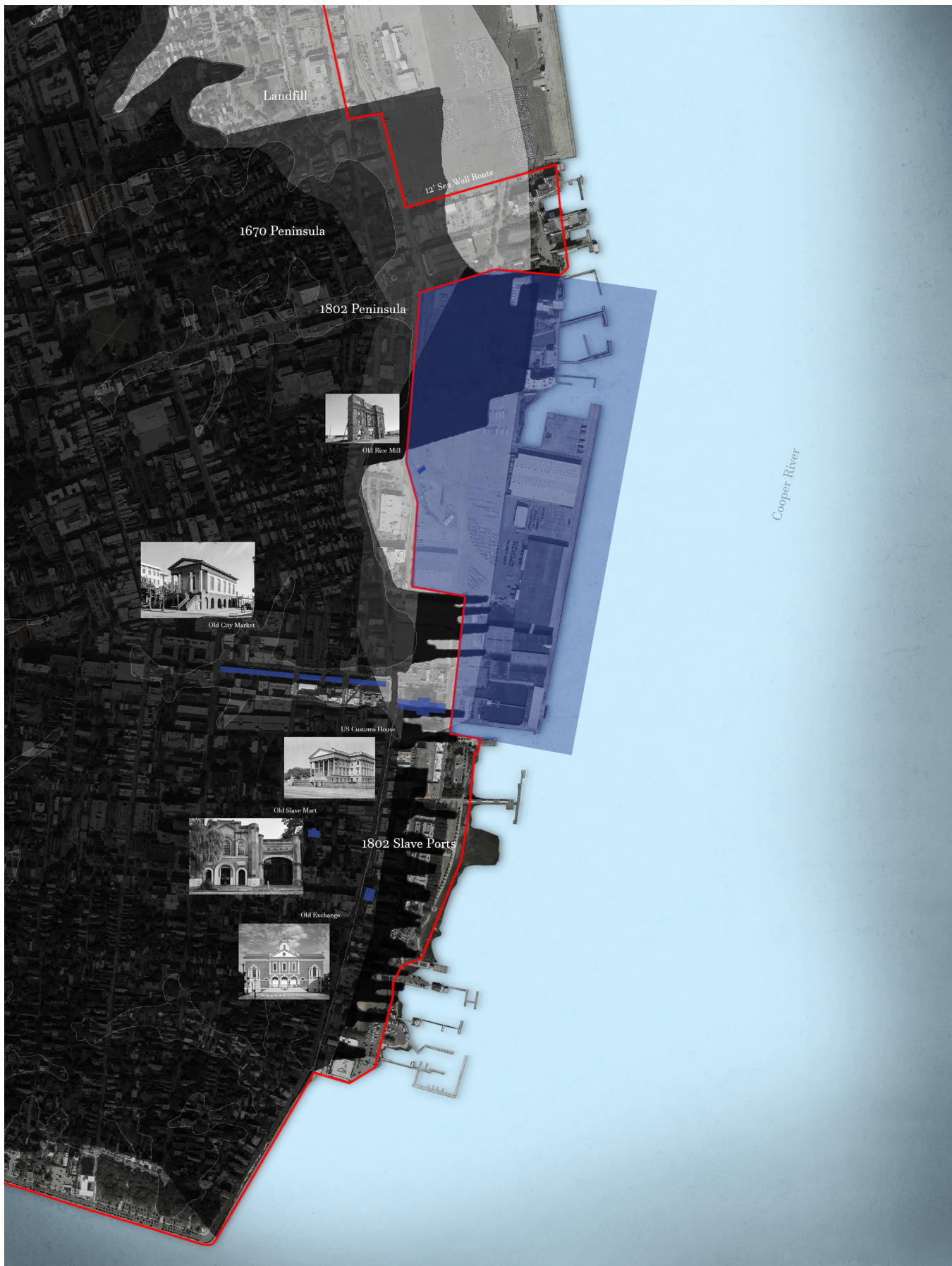


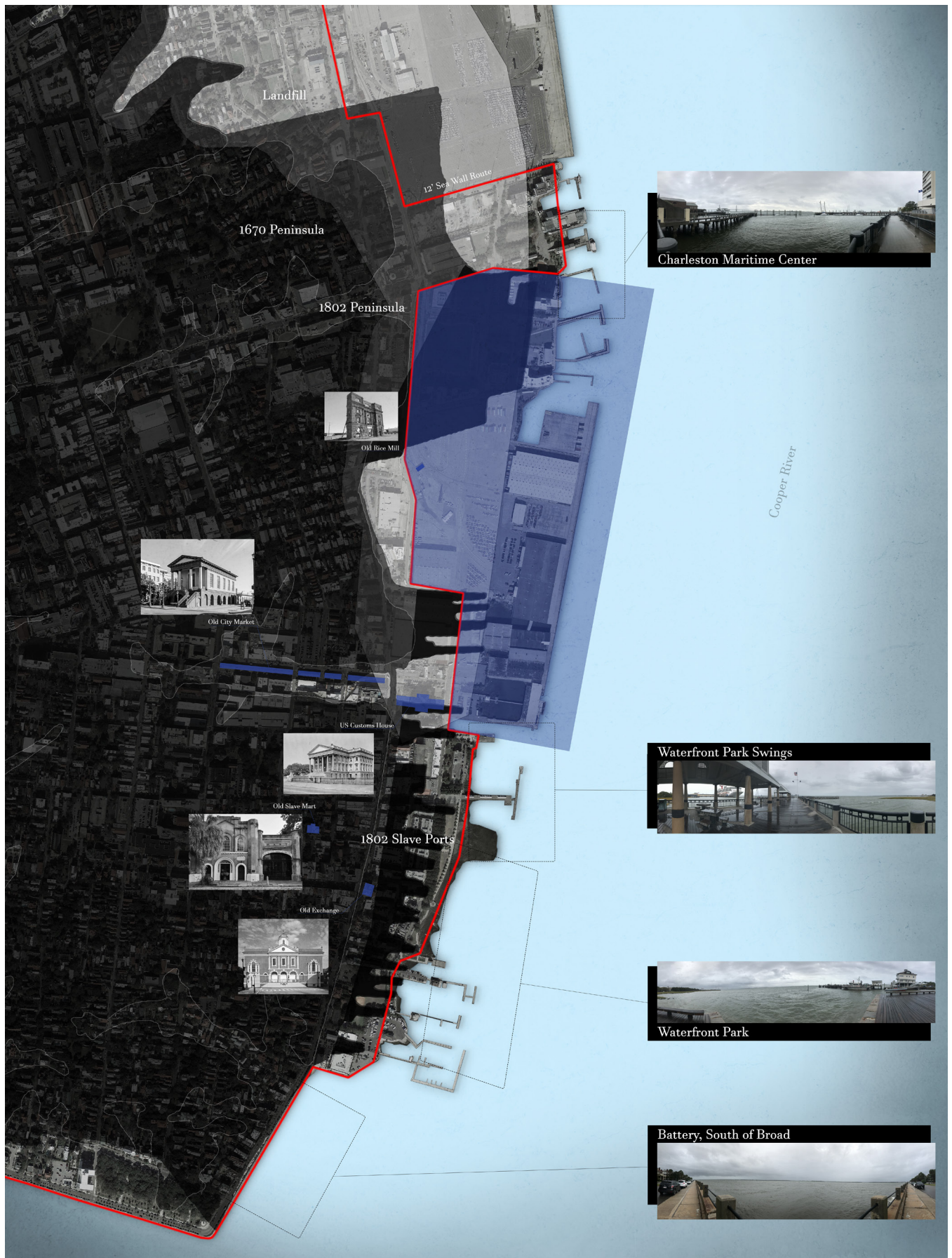


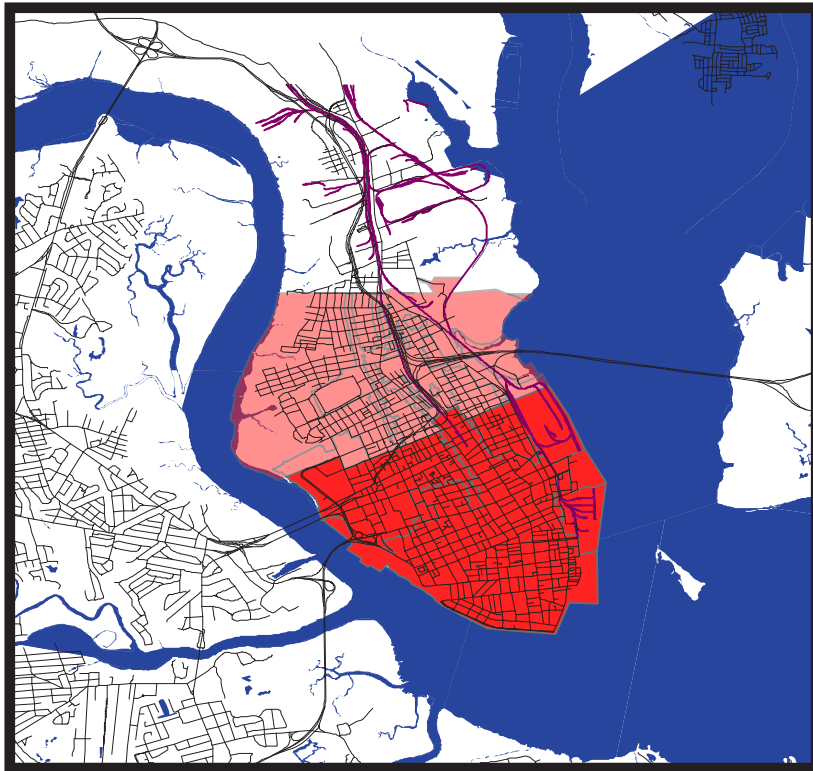
Charleston local Context

With observing the local context I then moved on to observe what buildings there are in the area of importance. Whether government, local, or historical. This led to a dark overtone and a discovery. I also documented the coastline while I was visiting.









Charleston's dark history chapter

While diagramming out significant pieces of context, I found that they all related back to slavery. Slavery played a significant role in Charleston's development both economically but also physically and geographically.

Significant dates for Slavery in South Carolina

1441
Portuguese explorers take 12 slaves from Africa back to Portugal

1502
First African slaves arrive in the New World

1641
Colonial plantations in the Caribbean begin exporting sugar
British traders also begin capturing and shipping slaves regularly

1860
South Carolin is the first state to secede from the Union

1861
First shot fired in the American Civil War at Fort Sumter

1492
Columbus introduces Western Europe to America

1670
Charleston is founded

1776
America declares independance from Great Britian

1783
British Society for Effecting the Abolition of the Slave Trade is founded

1808
British and US Slave Trade Abolition takes effect.

1865
Thirteenth Amendement is ratified abolishing slavery

1865
American Civil War ends

2018
The City of Charleston formally apologizes for its role in the slave trade



RESOLUTION

RECOGNIZING, DENOUNCING AND APOLOGIZING ON BEHALF OF THE CITY OF CHARLESTON FOR THE CITY'S ROLE IN REGULATING, SUPPORTING AND FOSTERING SLAVERY AND THE RESULTING ATROCITIES INFLICTED BY THE INSTITUTION OF SLAVERY AND FURTHER, COMMITTING TO CONTINUE TO PURSUE INITIATIVES THAT HONOR THE CONTRIBUTIONS OF THOSE WHO WERE ENSLAVED AND THAT ASSIST IN AMELIORATING REMAINING VESTIGES OF SLAVERY.

WHEREAS, Charleston (formerly Charles Town), founded in 1670, flourished in the 17th, 18th and 19th centuries from a robust economy, made possible by the labor of enslaved people, centering on the production of rice, indigo and other commodities; and

WHEREAS, as a result of the adoption and legalization of the institution of slavery from the 15th to the 19th centuries, more than 15.5 million Indigenous Peoples and Africans were subjected to enslavement to develop North America, South America and the Caribbean, with an estimated two million Africans not surviving the Middle Passage; and

WHEREAS, fundamental to the economy of colonial and antebellum Charleston was slave labor, Charleston prospering as it did due to the expertise, ingenuity and hard labor of enslaved Africans who were forced to endure inhumane working conditions that produced wealth for many, but which was denied to them; and

WHEREAS, approximately forty percent of enslaved Africans arrived in North America at the ports of Charleston, with hundreds of thousands of African American citizens today being able to trace their ancestry to Africans arriving here; and

WHEREAS, the institution of slavery did not just involve physical confinement and mistreatment; it also sought to suppress, if not destroy, the cultural, religious and social values of Africans by stripping Africans of their ancestral names and customs, humiliating and brutalizing them through sexual exploitation, and selling African relatives apart from one another without regard to the connection of family, a human condition universal among all peoples of the world; and

WHEREAS, for a time, notwithstanding the Declaration of Independence tenet that all men are created equal, the federal law of the land as embodied in the Constitution did not recognize enslaved Africans as full-fledged humans, denying citizenship either in number or by way of access to basic rights of due process and equal protection of the law, a condition that persisted until 1865 with the enactment of the 13th amendment to the Constitution and 1868 with the enactment of the 14th amendment to the Constitution requiring State compliance with Constitutional mandates; and

WHEREAS, notwithstanding the 14th and 15th amendments to the Constitution, institutionalized discrimination continued in many parts of the country, with the enactment and enforcement of laws that would come to be known as Jim Crow that were designed to separate African Americans from their fellow citizens, to suppress and intimidate their

Charleston's apology for slavery

In 2018, the City of Charleston formally apologizes for its role in the slave trade

The resolution was passed by the city council 7 - 5 in favor.
The third and forth paragraphs within states -

“WHEREAS, fundamental to the economy of colonial and antebellum Charleston was slave labor, Charleston prospering as it did due to the expertise, ingenuity and hard labor of enslaved Africans who were forced to endure inhumane working conditions that produced wealth for many, but which was denied to them; and


WHEREAS, approximately forty percent of enslaved Africans arrived in North America at the ports of Charleston, with hundreds of thousands of African American citizens today being able to trace their ancestry to Africans arriving here;”

THREE PROGRAMS

Public Space

Civic Program

Marketplace Opportunity

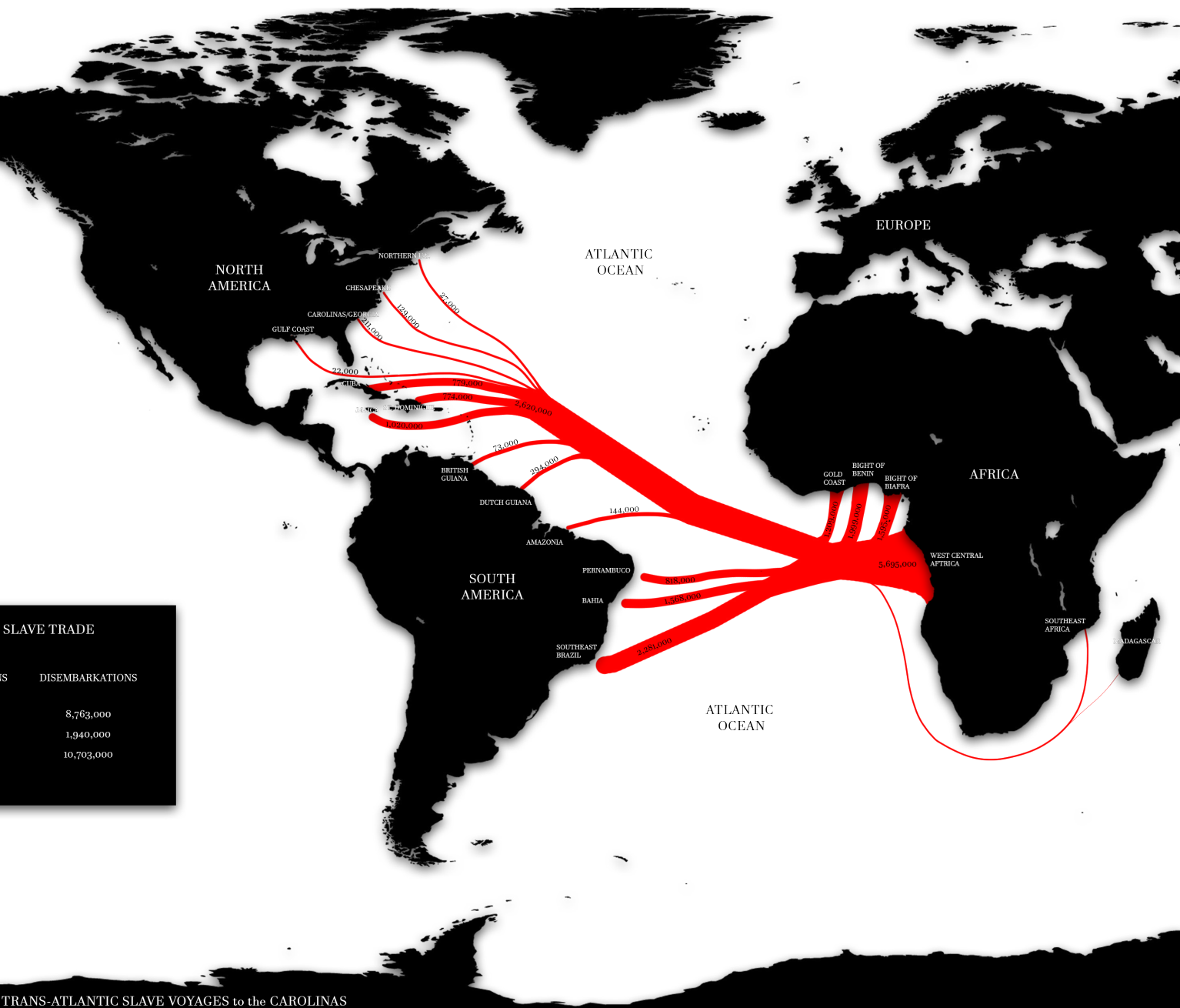


TRANS-ATLANTIC	
EMBARKATION	
Documented	10,160,000
Estimated	2,631,000
Total	12,521,000

Charleston's role in the slave trade

Charleston imported 40% of the slaves that came into the country.

The apology letter outlined 3 programs for improving the community.
A public space, civic space and a marketplace opportunity for locals.



03

DESIGN PROJECT

Dealing with the wall

The wall is a passive landmark that validates the prioritization of wealth generated from slavery 40% of slaves were brought to America through the port of Charleston during the transatlantic slave trade. Factors of capitalism are deciding the route of the wall.

Now there is the opportunity to work with that wall path and create something but with the intention of exclusivity and the program outlined by the Charleston city council.

This project attempts to find ways to make the wall an active space. Programs including but not limited to local economic and business spaces, a civic center, and a public green space.

The site offers a unique strangeness in how it interacts with both the natural/unnatural environments while answering to the different histories that the ground holds.



Route of Wall and Site

Ground has been a form of division or hierarchy. In society, the position geographically was influenced by your economic, social, or political/religious standing. Architecture is an articulation/definition of power and systems.



Main Axis Connection

The old market place is a tourist attraction and a main connection and hub for downtown Charleston



Historic Port Outline

The site includes the former Charleston slave ports. In the past, the expansion of the city of Charleston erased the water in to construct more lucratively financial site for the slave trade. Now the waters have started to reclaim some of its old domain. We must be careful to not let the past be erased in order to be denied or conveniently forgotten.



Gadsden's Wharf

Gadsden's wharf is an infamous landmark in which was used as a holding cell for offboarded slaves. It has a tragic history of mistreatment and the deaths of many slaves.



Old Rice Mill

Rice was actually South Carolina's main cash crop. It exploited the African knowledge of agriculture to produce it. The Old Rice mill was a slave run mill in Charleston. There is still the old facade left standing on the site.

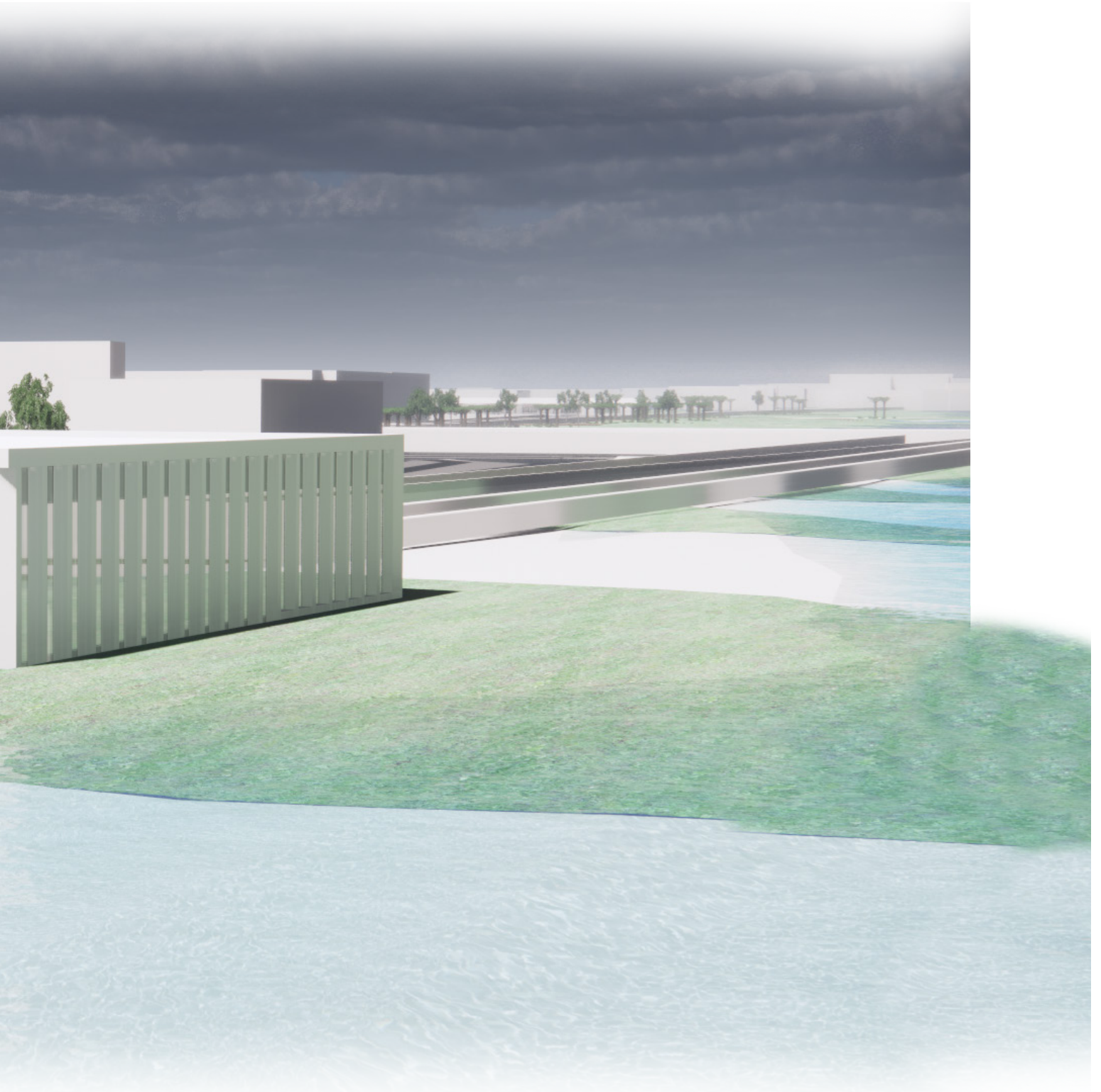


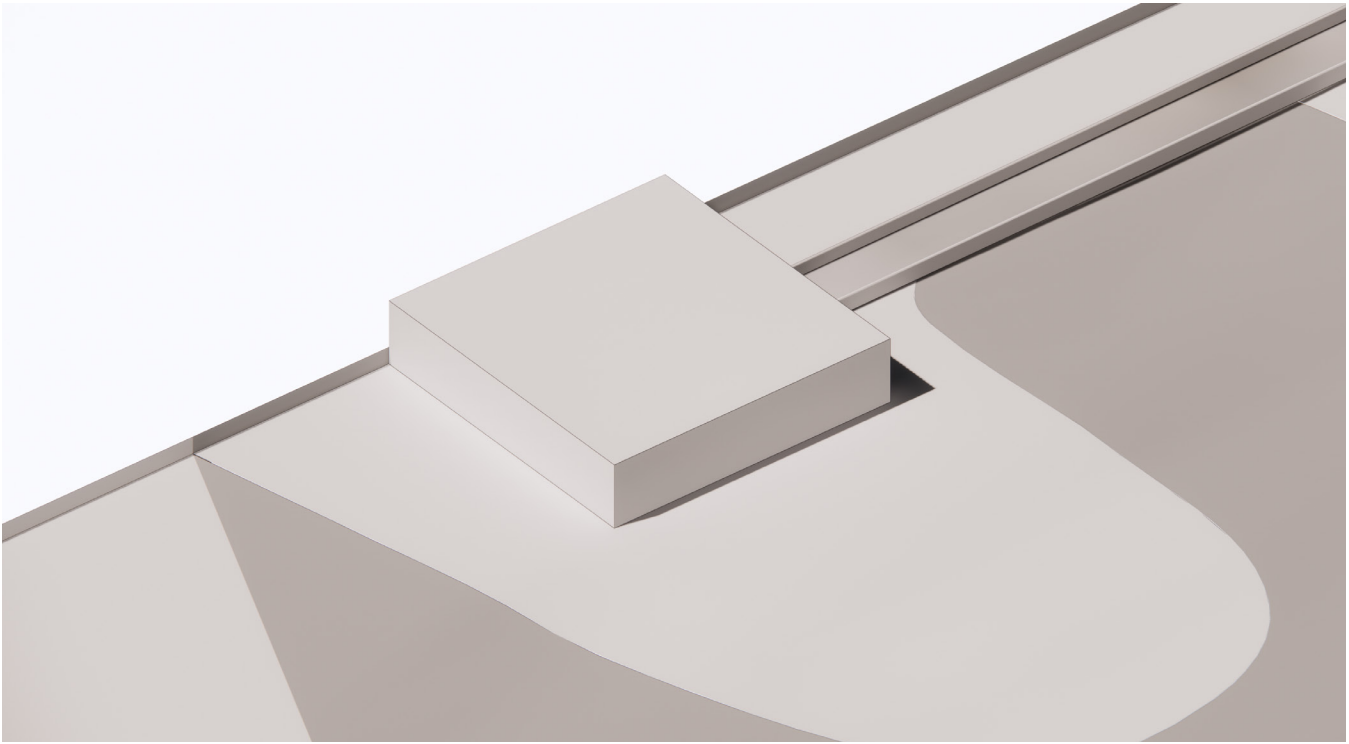
Old Slave Market

Through there were several, there is one slave market still historically preserved. This is located near the piers. These relationships create an outline for potential program insertion.



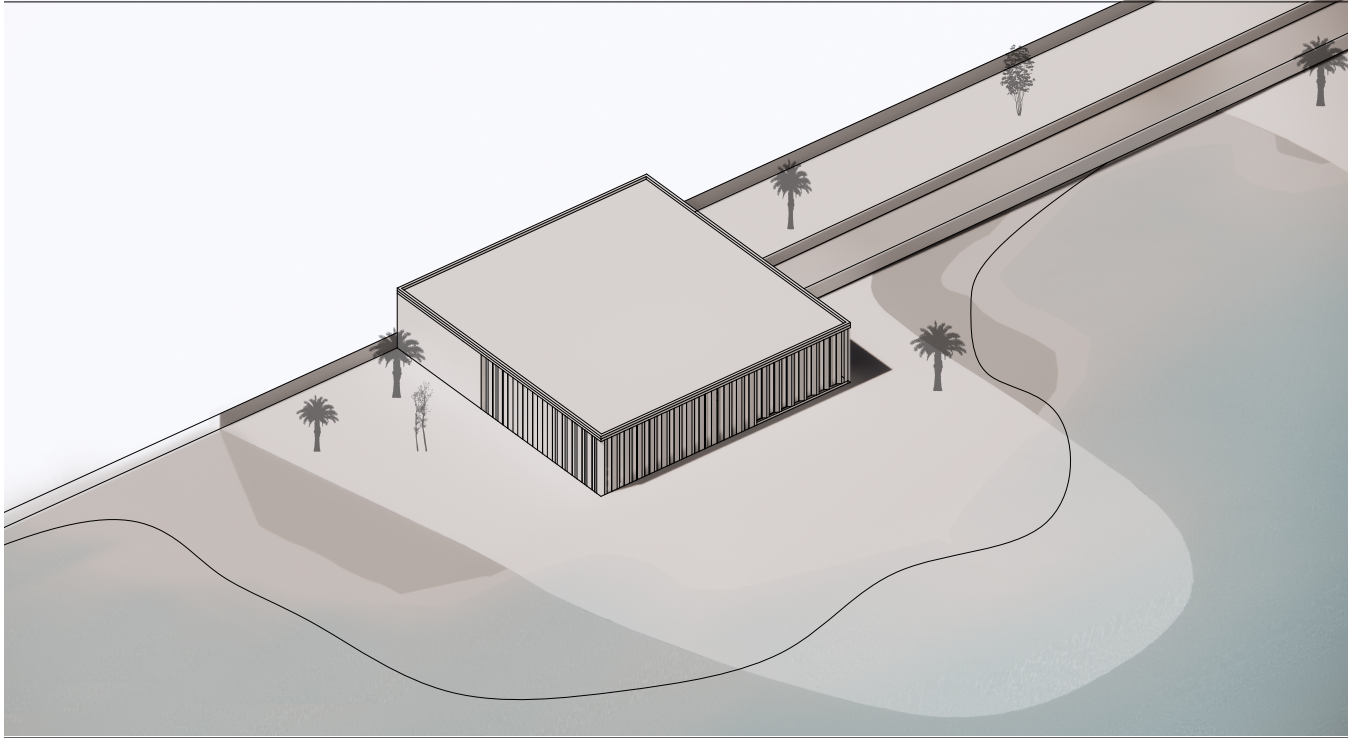
CIVIC CENTER





Civic Center

The Civic Center is one of the three programs outlined and will be located parallel with the old slave market. It is build at the current street elevation.

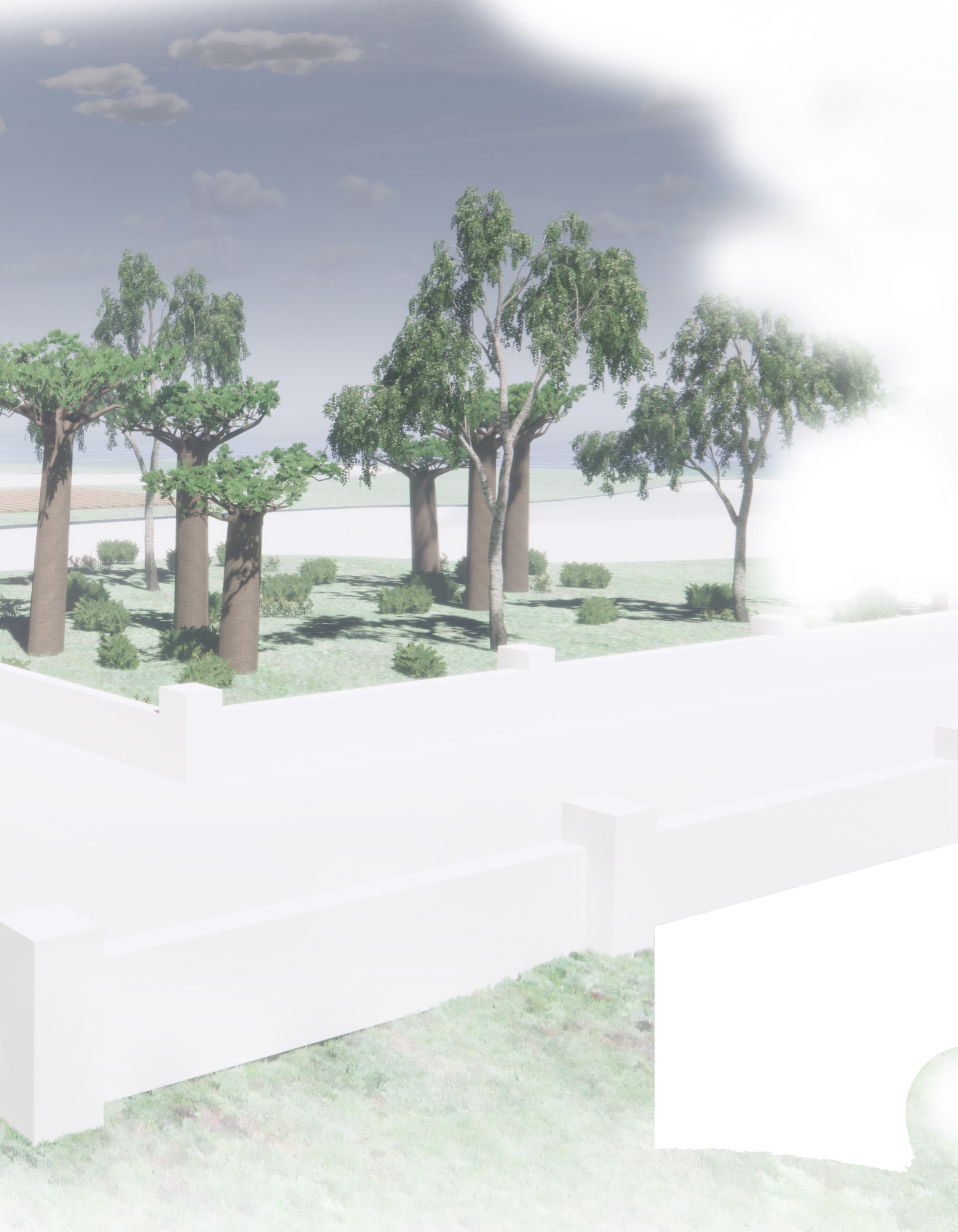


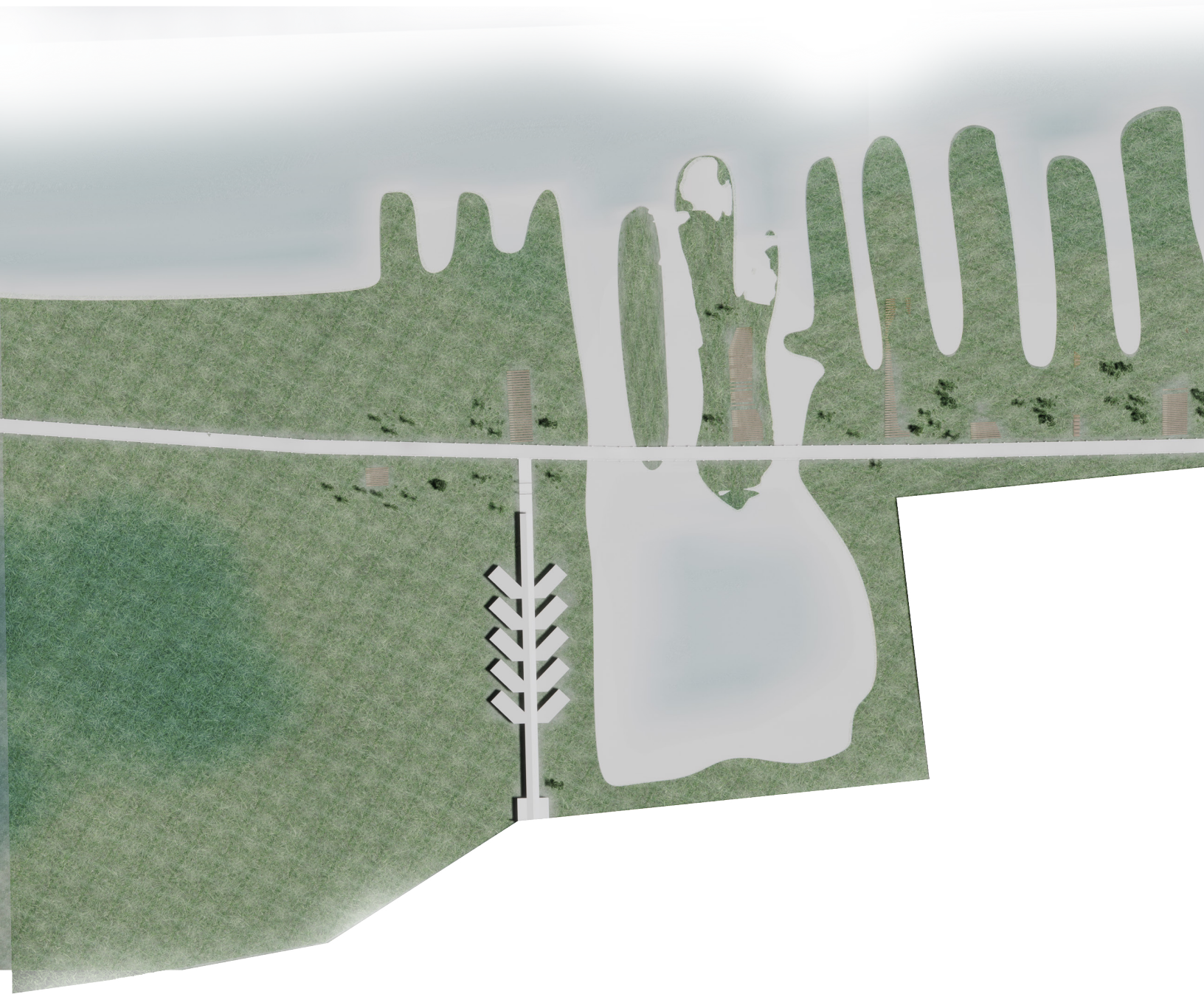
Civic Center Facade

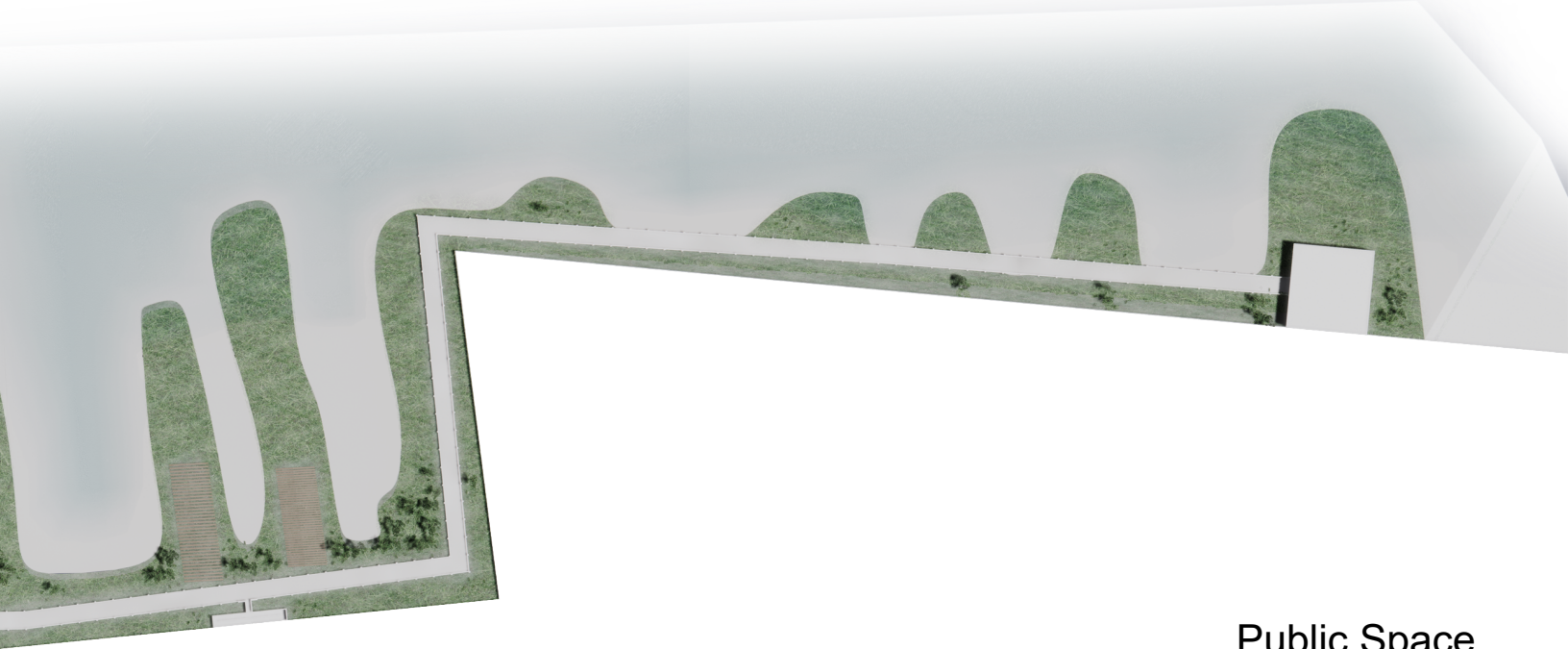
The facade of the Civic Center includes angled glass mullions to allow for reflecting extreme weather conditions from the coast while still offering great view of the bay.



Public Green Space







Public Space

The public green space is the second program outlined by the city council. It is created by the outlining the original slave ports and increasing the elevation these areas while decreasing the surrounding context. The former piers are outlined via pads of embedded materials, Like skeletons of an old animal poking through the ground.

The path through the site offers a direct line from civic center then to Gadsden's wharf creating a safe place to travel in different conditions.

The relationship that is ultimately being played with is the one between nature, architecture, landscape and the city. Create an available domesticated public space that overtime devolves into a new environment allowing the built edges that were once firm to fade away.

Mixing the cultivated and not so cultivated until the discovery that the garden is both broadcast from nature and remnants of planted design.

The design is no longer centralized but becomes shifted to follow the path of the 19th century docks.



3' Additional Tide Rise



5' Additional



6' Additional Tide Rise



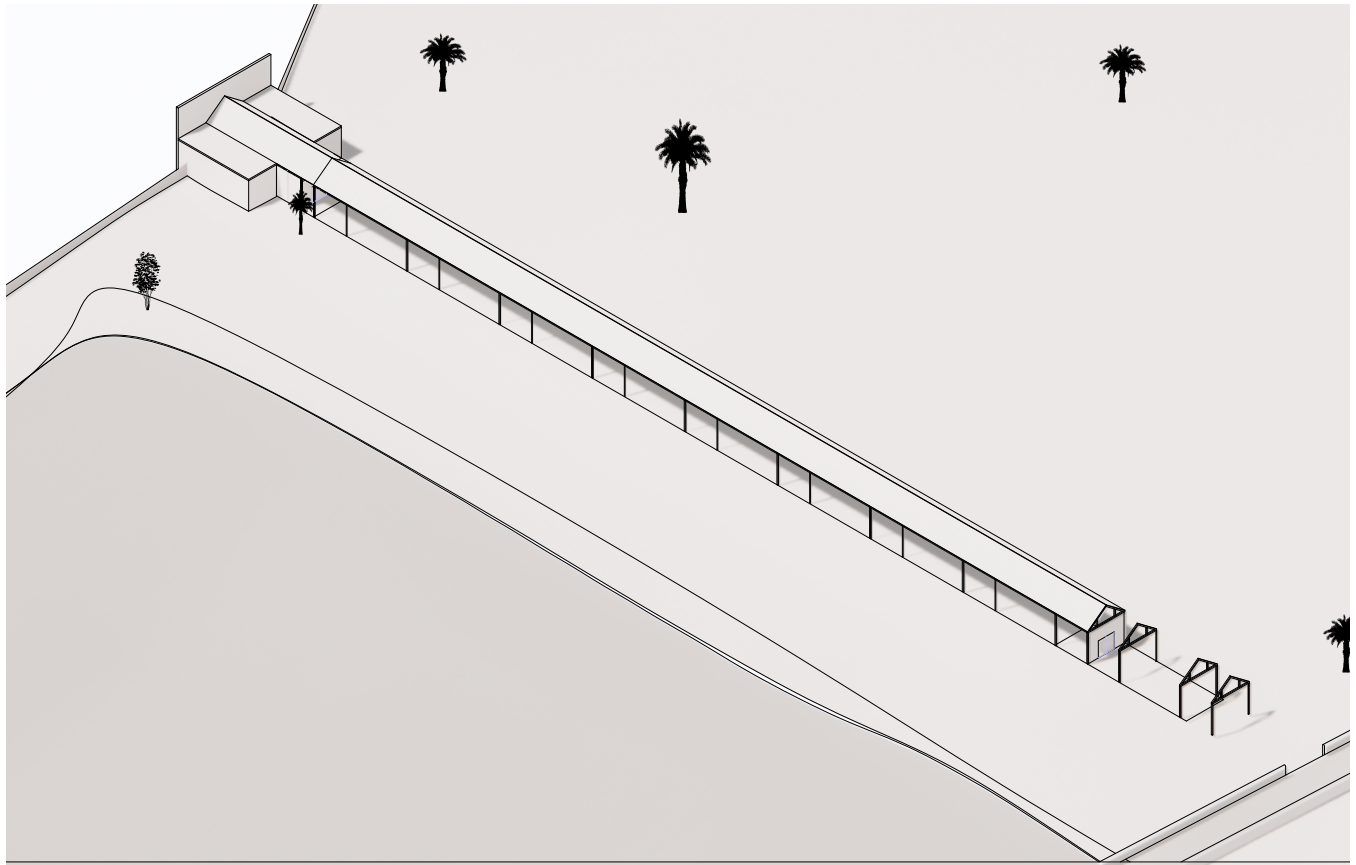
6' Additional Tide Rise

Market

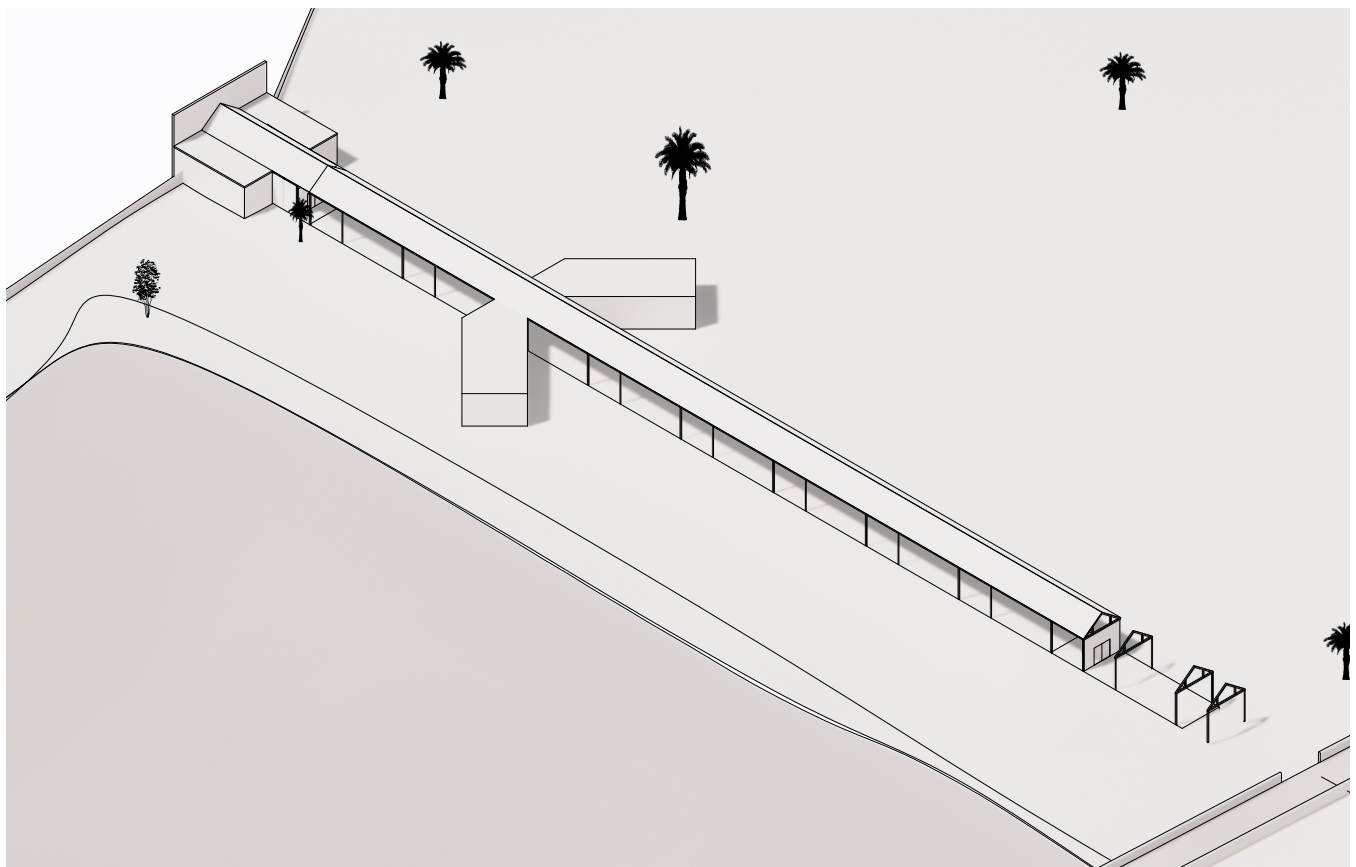


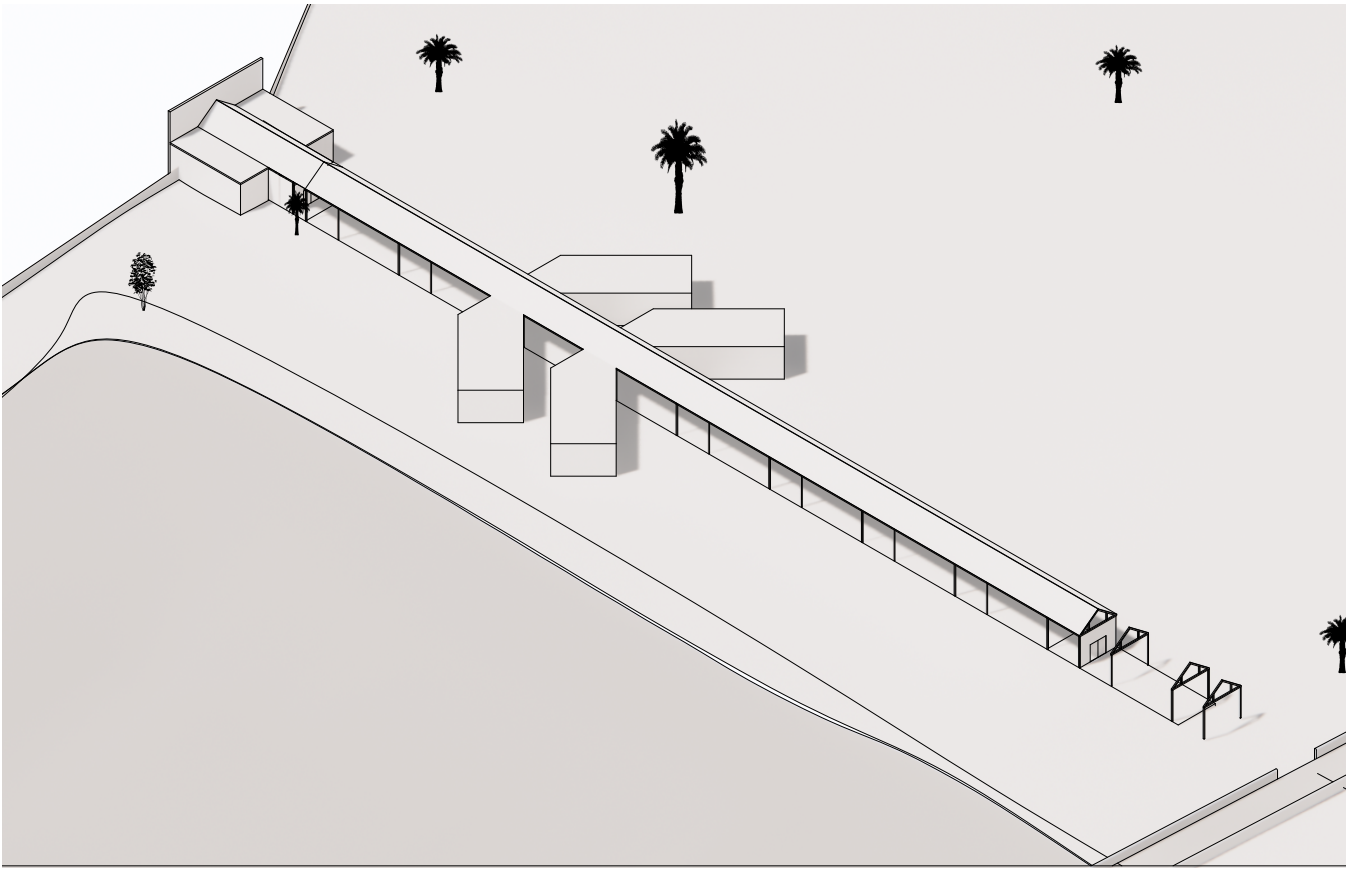
The Marketplace

The marketplace will take on the facade of the old rice mill as a reminder of an old face. Put to new use it will now stand for opportunity instead of economic exploitation as it had in the past.

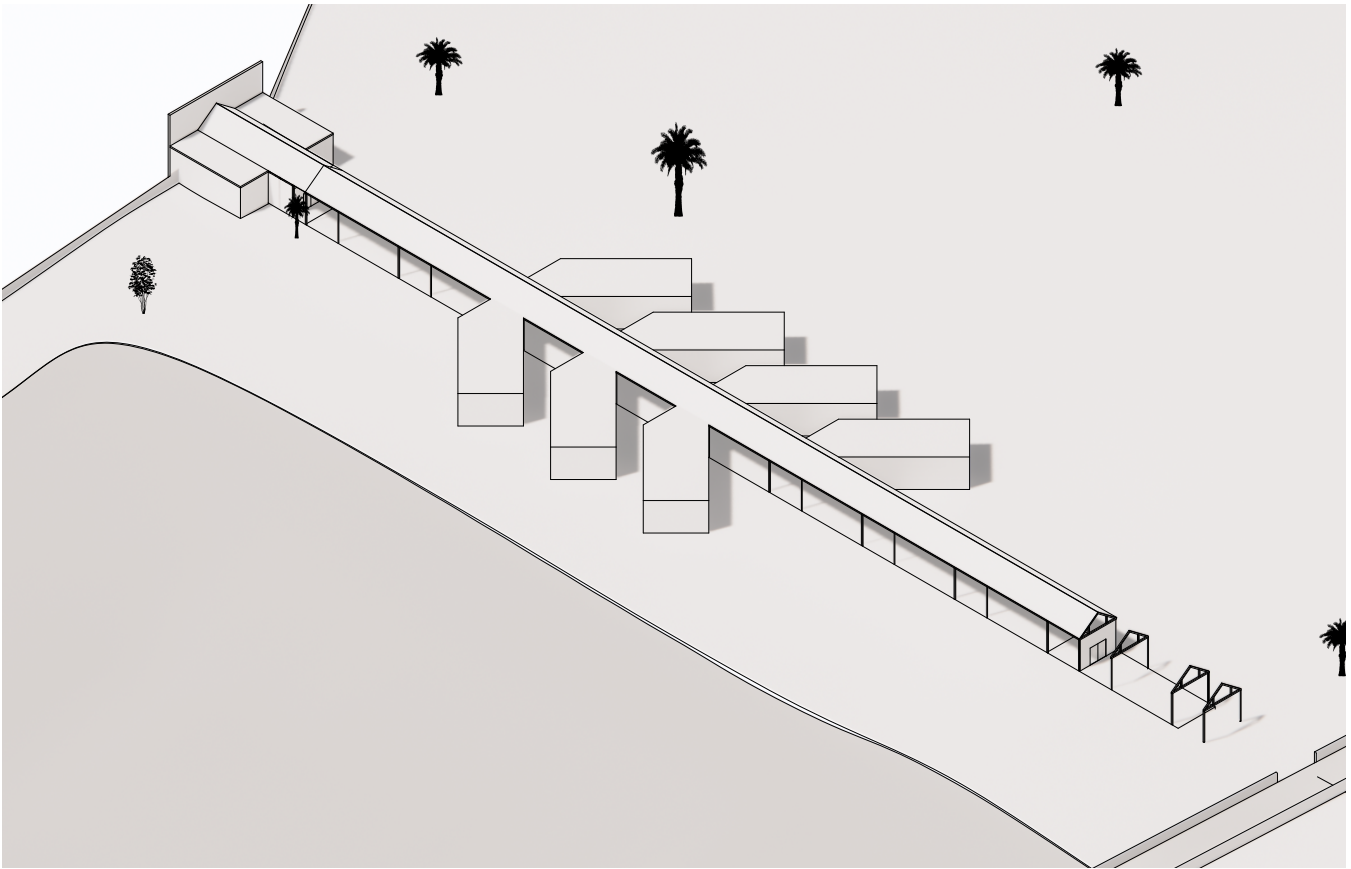


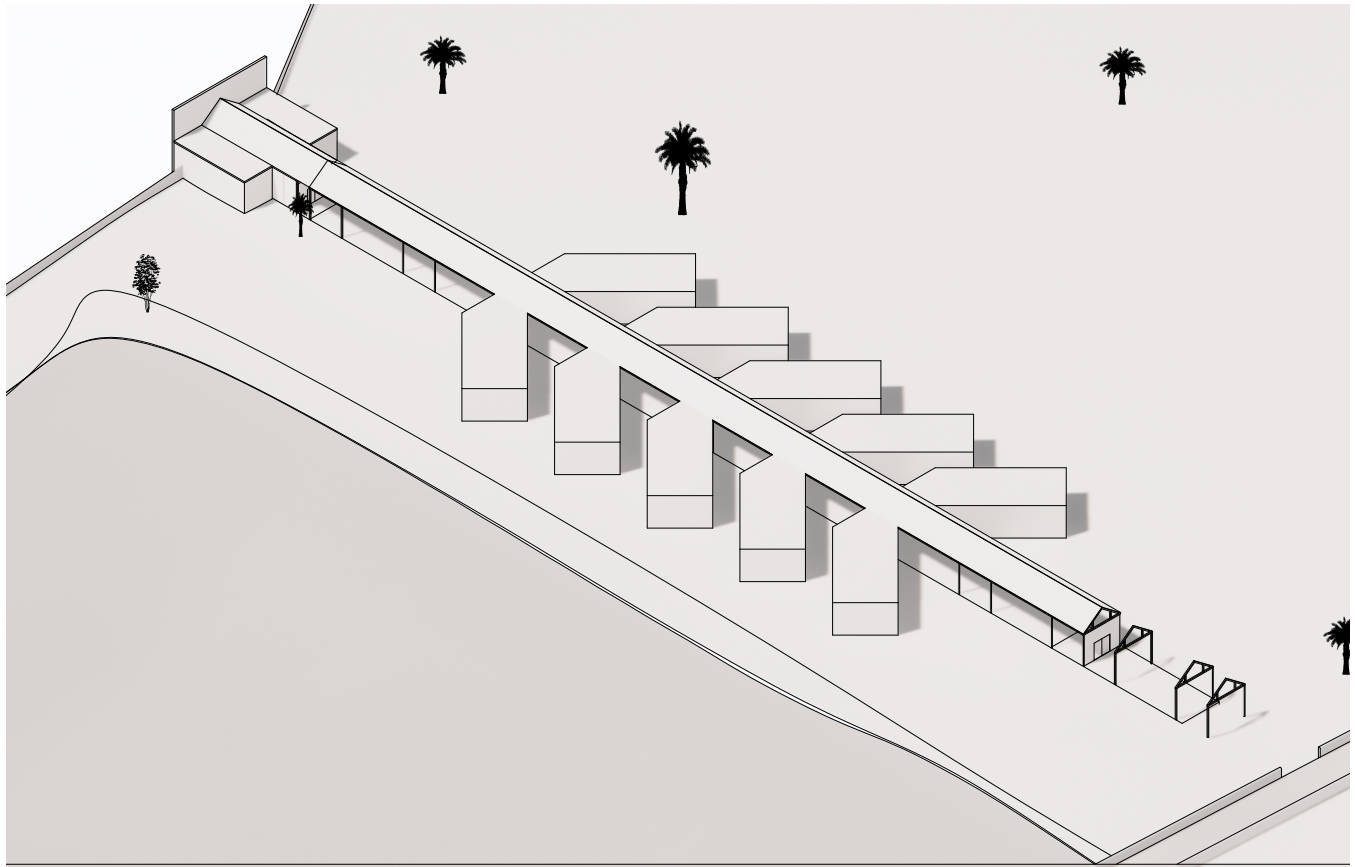
The market has the traditional peaked roof similar to the old market on the city axis.





The market will develop is stages through a modular approach.





The facade is made up of storm paneling and strengthened glass to endure the various weather conditions





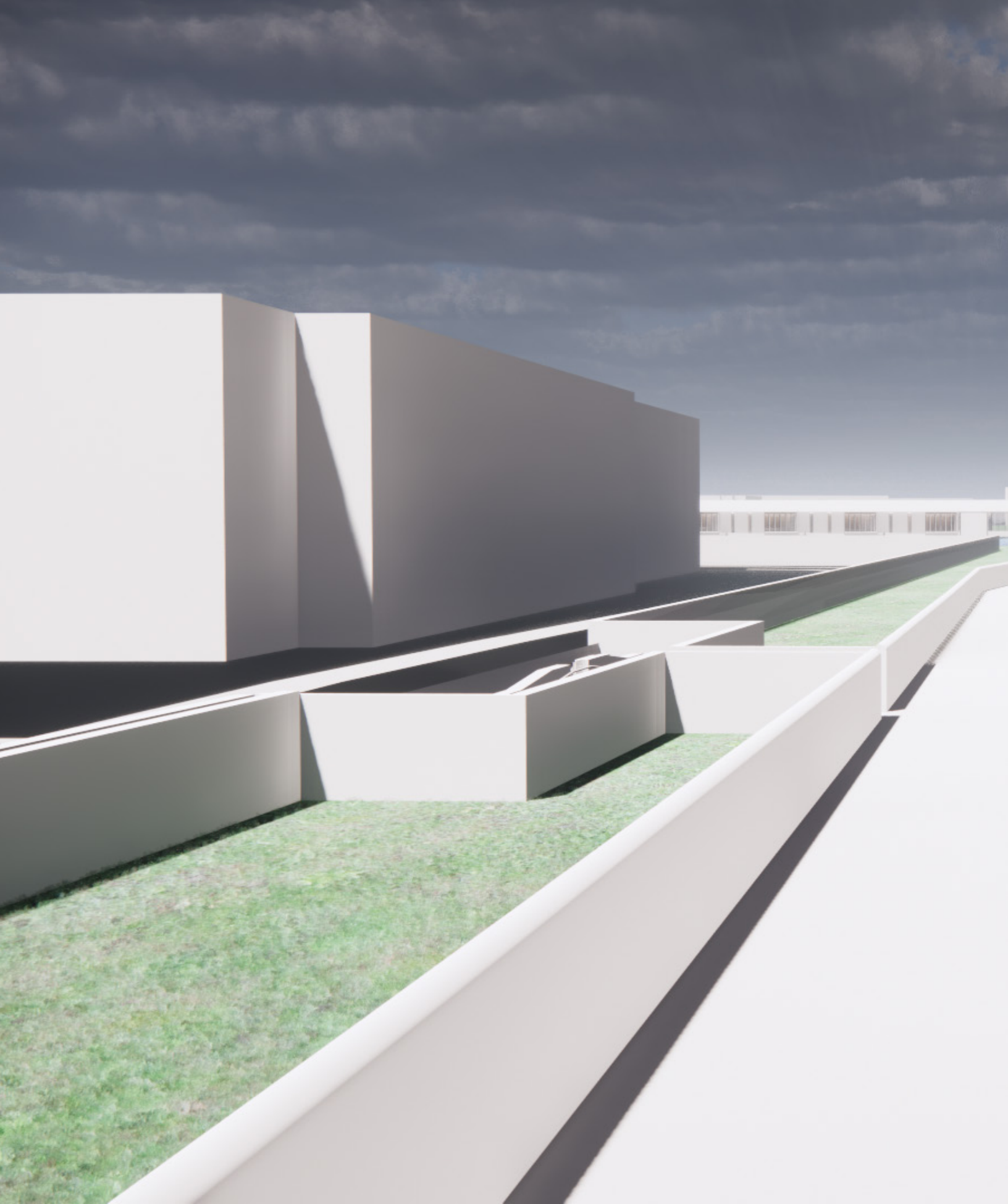


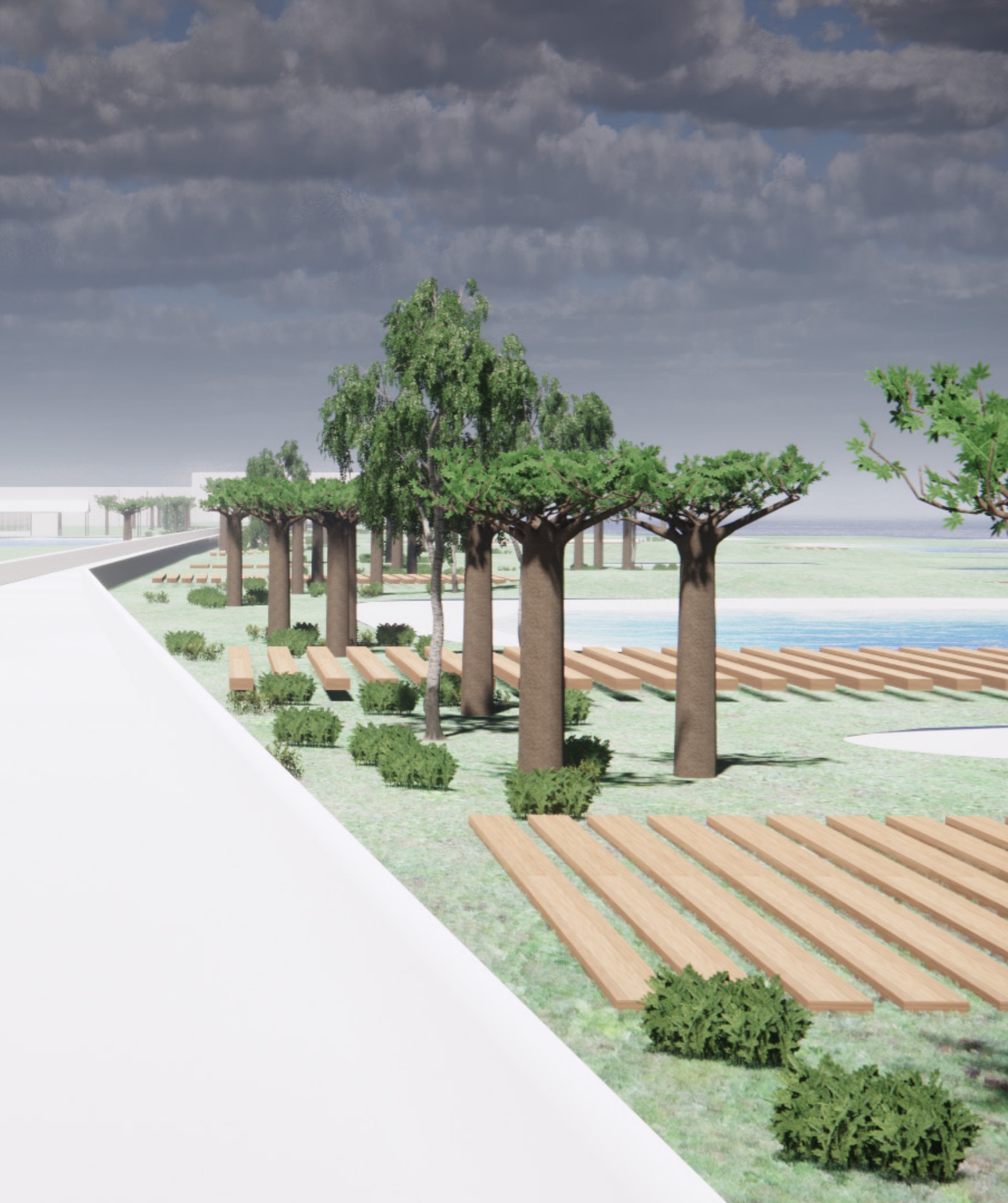












BIBLIOGRAPHY

Bibliography and Citations

Savoy, Daniel. 2012. Venice from the water architecture and myth in an early modern city. New Haven [u.a.]: Yale University Press.

Gauzin-Müller, Dominique, and Nicolas Favet. 2002. Sustainable architecture and urbanism: concepts, technologies, examples. 963985841. Basel: Birkhäuser.

Slavid, Ruth. 2009. Extreme architecture [building for challenging environments]. London: Laurence King.

Marshall, Stephen. 2009. Cities, design & evolution. London: Routledge.

Cosgrove, Denis. Mappings. London: Reaktion Books, 2002.

Rinne, Katherine Wentworth, The waters of Rome: aqueducts, fountains and the birth of Baroque city. (Yale University Press 2011), 16

Kikutake (1959), Kiyonori, "Kaijo Toshi Proposed design of Marine City by Kiyonori Kikutake", Kokusai Kenchiku, Vol.26. No.2, 1959,

Roland Barthes, "An Introduction to the Structural Analysis of Narrative" in New Literary History, vol. 6, no. 2, (Baltimore: The Johns Hopkins University Press, Winter 1975).

Czerniak, Julia. Downsvew Park Toronto. München: Prestel, 2001.

Hegewald, Julia A. B., Water architecture in South Asia: a study of types, development and meanings. (Leiden ; Boston : Brill, 2002.), 43

McHarg, I. L. Design with Nature. New York: John Wiley, 1995.